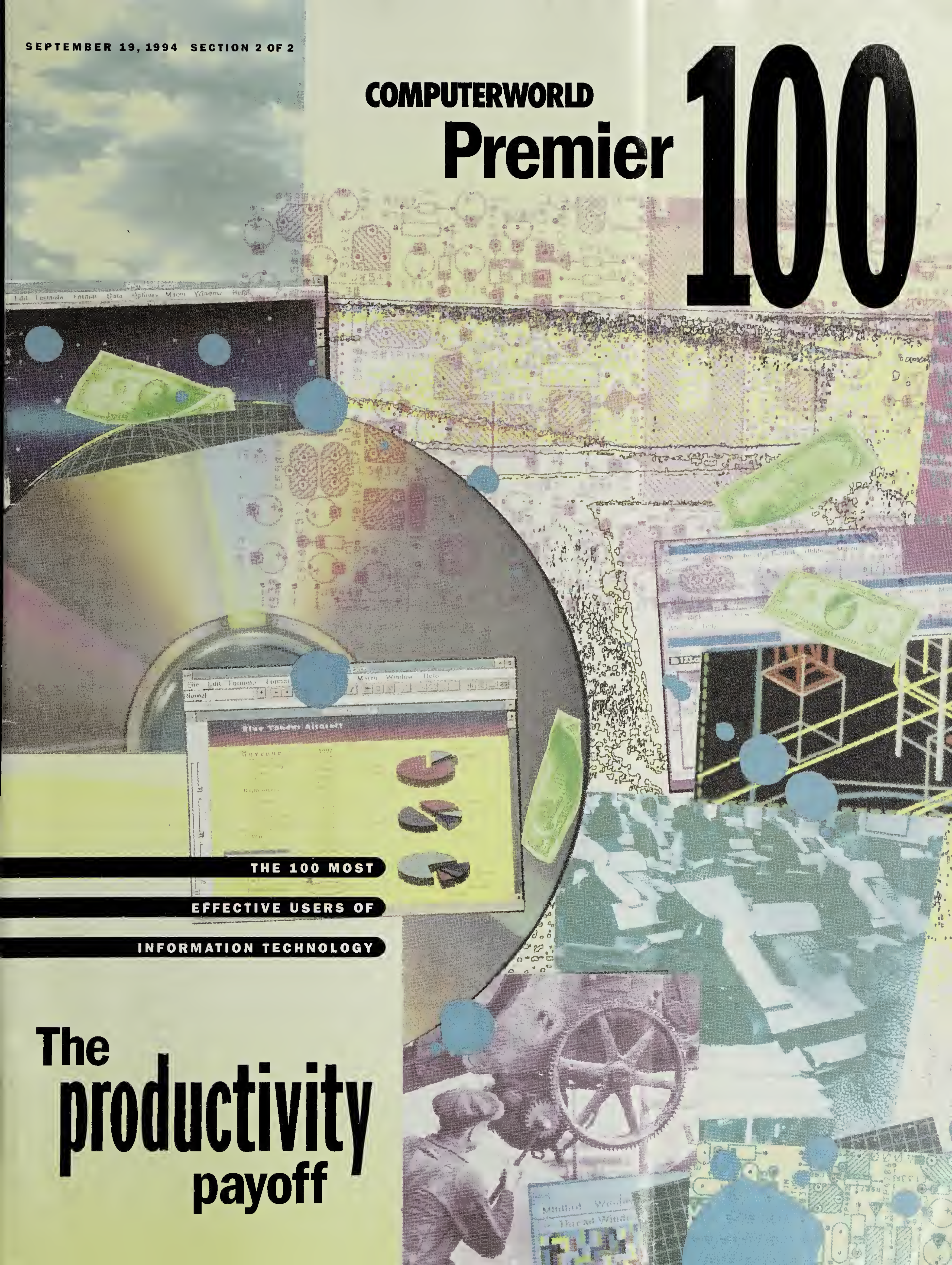
SEPTEMBER 19, 1994 SECTION 2 OF 2

COMPUTERWORLD Premier 100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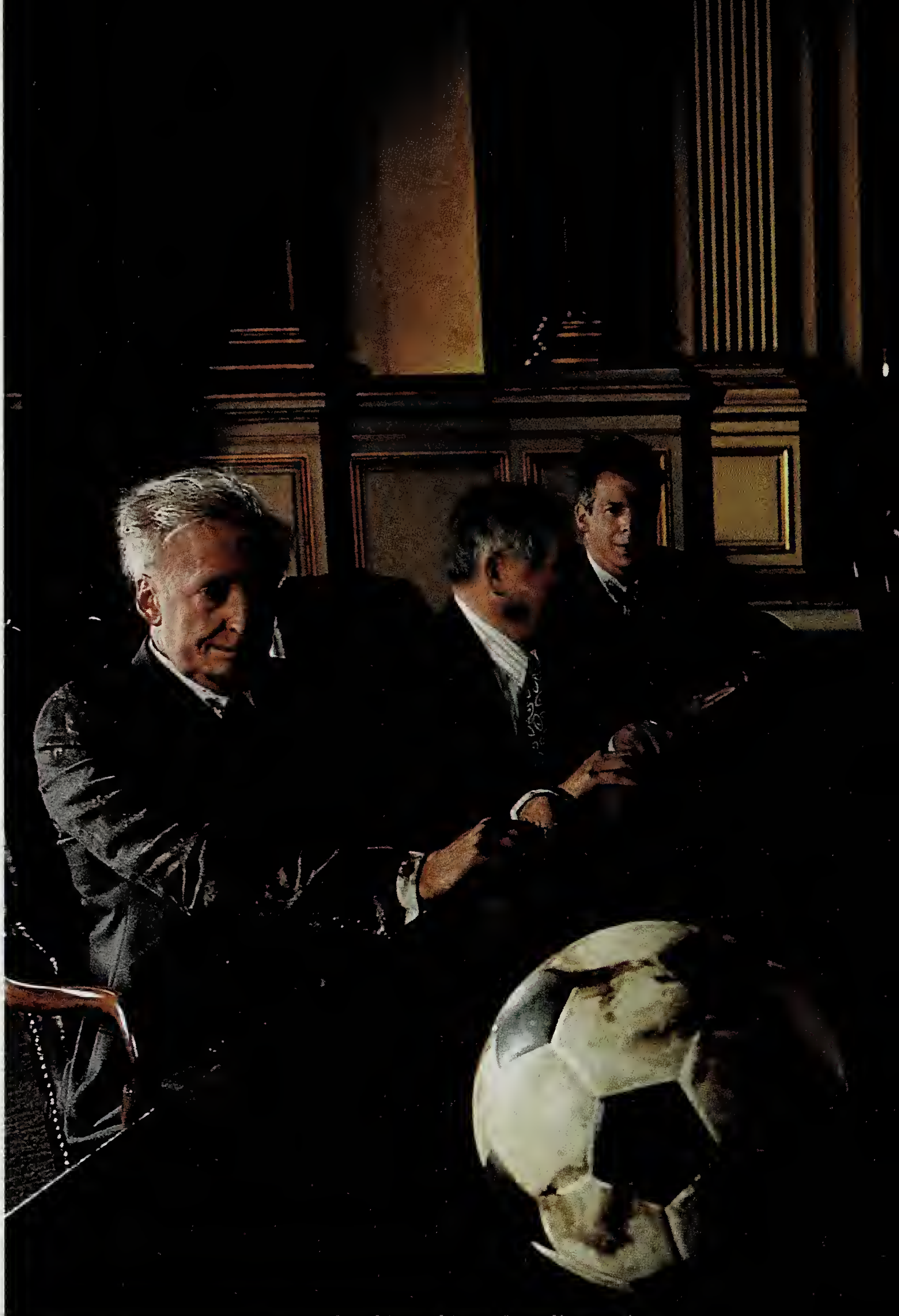
THE 100 MOST EFFECTIVE USERS OF INFORMATION TECHNOLOGY

The productivity payoff



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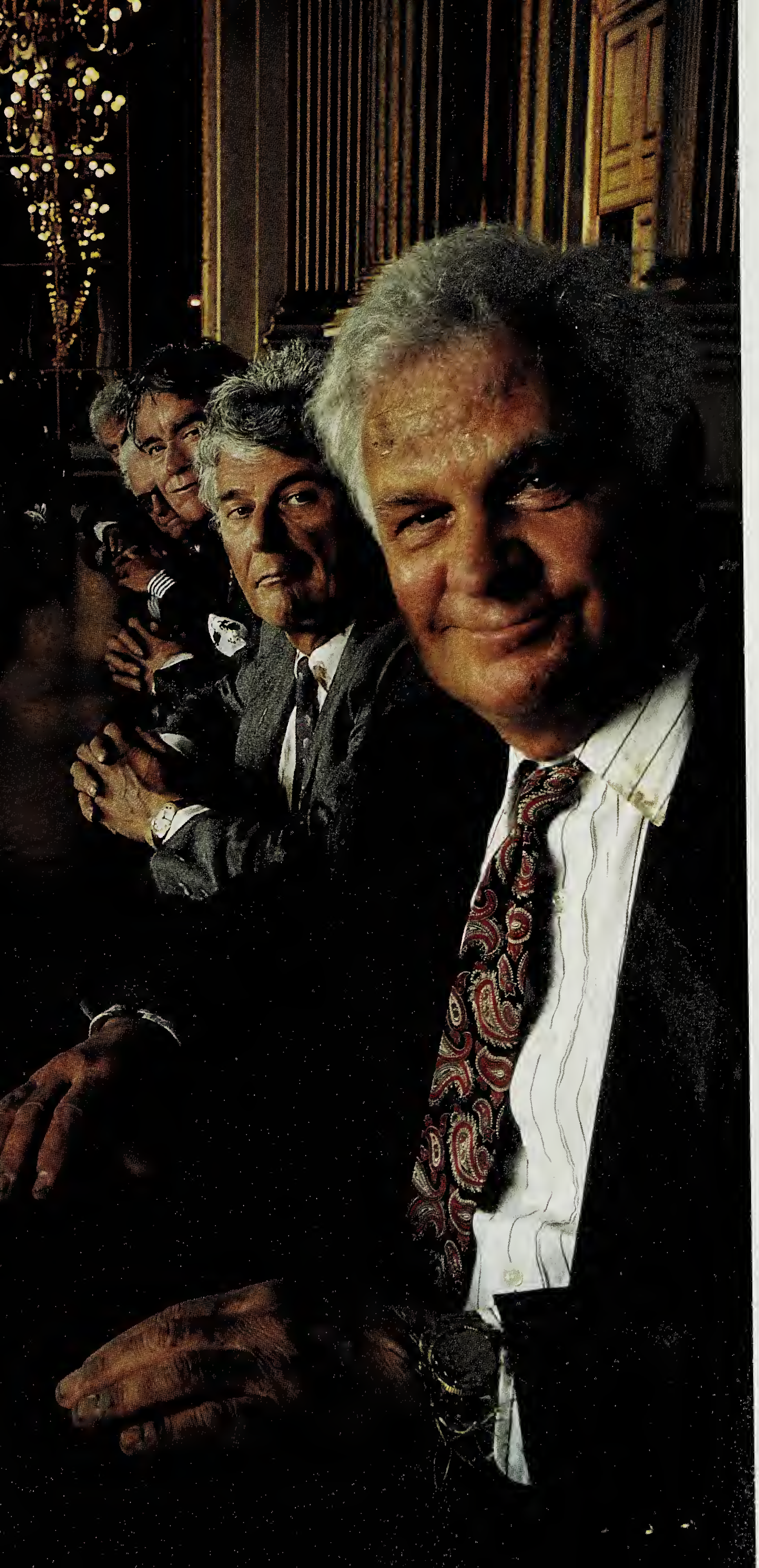

dinated and executed field operations for 24 World Cup teams that played in four different time zones. The entire business operation of the World Cup games — more than $1 billion — was run on Sun systems. ◈ And, remarkably, the entire network was installed in less than four months. ◈ Which may be why, as soccer fans cheered the Brazilian champions, computer fans cheered a computing system that proved simple enough to manage, yet powerful enough to run, the world's largest sporting event. ◈ More than 135,000 businesses are using Sun systems, powered by the SPARC® chip and the Solaris operating environment, to gain a competitive advantage. To learn more, call 1-800-426-5321, ext. 755. Or, on the Internet, access Sun's World Wide Web server at http://www.sun.com/

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Computerworld Premier 100

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cover illustration by MARTY GUNSAULLUS

5 **Editor's note**
by Paul Gillin
This year's *Premier 100* members are doing more with less — and doing it very well.

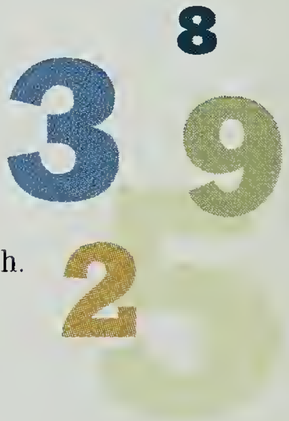
8 **Best of breed**
by Michael L. Sullivan-Trainor
Tough economic times have spawned a lot of innovation in IS spending.

10 **Pressure to produce**
by Paul Gillin
The productive benefits of the trillion dollars invested in computers in the 1980s are beginning to show up — in some unexpected ways.

photograph by WILLIAM MCINTYRE

13 **Defying the odds**
by Kevin Burden
No. 1 Unifi, Inc. weaves big profits and high growth out of the threads of a stagnant textile industry. A lean IS department is part of the pattern.

17 **The rest of the best**
by Renee Barber
The companies that round out the *Premier 100* Top 10 list range from railroads to biotech. But they all share an intense focus on technology's bottom-line benefits.



20 **Power of the purse**
by Derek Slater
Giving up spending control to user departments doesn't have to be a drag. Some IS operations are actually embracing the trend.

25 **Rocket man**
by Craig Stedman
Rockwell's James Sutter finds the silver lining behind clouds in the defense industry.

contents

photograph by WILLIAM MCINTYRE

26 **Get connected!**
by Avery Jenkins
Premier 100 companies are finding that the benefits of E-mail and EDI connections are showing up in more ways than just postal savings.

33 **Bullish on technology**
by Craig Stedman
While everyone else decentralizes, Merrill Lynch's Howard Sorgen looks for savings through consolidation.

34 **Happy together**
by Joseph Maglitta
If you're lucky enough to report to the CEO, you'd better be up to the challenge.

illustration by M.A.D.

36 **IS in his genes**
by Joseph Maglitta
Amgen, Inc.'s CEO Gordon Binder wants computing to flourish in his company's high-growth culture.

38 **Feelin' groovy**
by Paul Gillin
Our annual opinion survey shows that most *Premier 100* executives welcome new management scrutiny.

40 **Star performers**
by Kim S. Nash
Some companies far outdistance their industry peers in their Information Productivity rankings. Here's a sample of what they're doing right.

45 **How we evaluated productivity**
by Paul Strassmann
The creator of the Information Productivity Index outlines a new investment concept: Return on management.

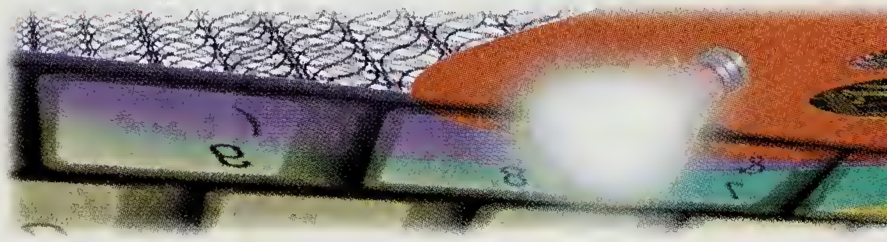


illustration by M.A.D.

46 **The Premier 100 at-a-glance tables**
Comprehensive tables showing how the Top 100 companies are spending their dollars in areas such as client/server, PCs and staffing.

54 **Company index**
An alphabetical listing of *Premier 100* companies and their IS leaders.

55 **Lessons of the productivity paradox**
by Stephen Roach
The productive value of the 1980's IS investment is showing up, but why did it have to take so long?

Premier 100

the 100 most effective users of information technology

1 Unifi, Inc.
2 Illinois Central Corp.
3 Ambac, Inc.
4 ARA Group, Inc.
5 UST, Inc.
6 Fluor Corp.
7 MAPCO, Inc.
8 MBIA, Inc.
9 U.S. Healthcare, Inc.
10 Amgen, Inc.
11 Newmont Mining Corp.
12 Cooper Tire & Rubber Co.
13 Great Lakes Chemical Corp.
14 Abbott Laboratories
15 International Flavors & Fragrances, Inc.
16 The Bear Stearns Cos.
17 Walt Disney Co.
18 CSF Holdings, Inc.
19 Ace Hardware Corp.
20 Waste Management, Inc.
21 Collective Bancorp, Inc.
22 Schering-Plough Corp.
23 Fruit of the Loom, Inc.
24 Morgan Stanley Group, Inc.
25 American Home Products Corp.
26 Cone Mills Corp.
27 Merck & Co.
28 Briggs & Stratton Corp.
29 Merrill Lynch & Co.
30 Boston BanCorp.
31 Sunbeam-Oster Co.
32 Salomon Brothers, Inc.
33 Coca Cola Co.
34 Bristol-Myers Squibb Co.
35 Praxair, Inc.
36 Charles Schwab Corp.
37 Gannett Co.
38 GEICO Corp.
39 Levi Strauss Associates, Inc.
40 Dibrell Brothers, Inc.
41 Gerber Products Co.
42 Rubbermaid, Inc.
43 Medtronic, Inc.
44 American President Cos.
45 H&R Block, Inc.
46 Raytheon Co.
47 Kellogg Co.
48 Worthington Industries, Inc.
49 United Healthcare Corp.
50 W. M. Wrigley Jr. Co.
51 Johnson & Johnson
52 Newell Co.
53 NALCO Chemical Co.
54 Lancaster Colony Corp.
55 E-Systems, Inc.
56 Nike, Inc.
57 Advanta Corp.
58 Southwestern Bell Corp.
59 Travelers Corp.
60 Charter One Financial, Inc.
61 Gap, Inc.
62 Valspar Corp.
63 Bankers Trust New York Corp.
64 McDonald's Corp.
65 Reebok International Ltd.
66 First Commerce Corp., LA
67 Sigma Aldrich Co.
68 Thiokol Corp.
69 JP Morgan & Co.
70 Rockwell International Corp.
71 Emerson Electric Co.
72 CPC International, Inc.
73 IDS Financial Corp.
74 H. J. Heinz Co.
75 3M Co.
76 Fifth Third Bancorp
77 Ameritech Corp.
78 Rhone Poulenc Rorer, Inc.
79 General Mills, Inc.
80 PaineWebber Group, Inc.
81 Turner Corp.
82 Hon Industries, Inc.
83 MBNA Corp.
84 General RE Corp.
85 First Virginia Banks, Inc.
86 Allergan, Inc.
87 Leggett & Platt, Inc.
88 May Department Stores Co.
89 Hershey Foods Corp.
90 Hillenbrand Industries, Inc.
91 Stewart & Stevenson Services
92 Tribune Co.
93 Reader's Digest Association, Inc.
94 Wal-Mart Stores, Inc.
95 Sonoco Products Co.
96 Gillette Co.
97 Werner Enterprises, Inc.
98 Avon Products, Inc.
99 Dover Corp.
100 Upjohn Co.

from the Editor

More for the money

Do more with less.

It's the business mantra of the '90s. Recession and decentralization have wreaked havoc on corporate hierarchies. Layoffs have eroded the bonds of trust between employer and employee. Globalization has expanded competition beyond U.S. shores.

All this has hit corporate IS hard. Technology has become a deluge, with project cycle times measured in days. Meanwhile, management is increasingly suspicious of the productive value of the computing investment. Service sector productivity was flat during the 1980s, and CEOs are rightfully asking whether the trillion dollars U.S. business spent on computers will ever pay dividends.

It was with this new reality in mind that we substantially revised the selection criteria for this year's *Premier 100* ranking.

Throughout the previous six years of the *Premier 100*, we used a metric that favored companies that spent heavily on IS, invested in end-user computing and also achieved high profitability.

Noble goals, but not in line with the realities of the '90s. We decided this year to revamp and simplify the selection criteria for the *Premier 100* to recognize companies that spend the least on IS and get the greatest business value.

To assemble the rankings, we turned to Paul Strassmann, a veteran CIO and one of the leading authorities on the productivity of the IS investment. Strassmann's Information Productivity Index enabled us to select the *Premier 100* based on publicly available data. For a detailed methodology, see his introduction to the charts on page 45. We then surveyed the Top 240 companies so we could compare those in the Top 100 with others that finished in the second tier. Our goal was to find out what these effective users are doing right.

On the following pages, you'll see what we learned. The *Premier 100* are doing more with less, and they're doing it well.

THE PREMIER 100 TEAM (from left to right): Michael L. Sullivan-Trainor, Kimberlee Smith, Catherine McCrorey, Stephanie Faucher, Kevin Burden, Renee Barber and Paul Gillin

We are interested in hearing your reactions to the *Premier 100*, our selection method and the special issue you're now reading. Contact me directly at (508) 620-7724 or, if the Infobahn is your thing, send me a message via MCI Mail at 575-4120 or the Internet at pgillin@cw.com. ☐

Paul Gillin

PAUL GILLIN

ACKNOWLEDGMENTS

Computerworld would like to thank Paul Strassmann for his advice and assistance on this project. We are also grateful to the *Computerworld* Database Division and Computer Intelligence for providing research assistance. And special thanks to all the IS executives and their staffs for enduring many phone calls and requests for information during what should have been a normal summer.

illustration by M.A.D.; *photograph by* RALPH MERCER

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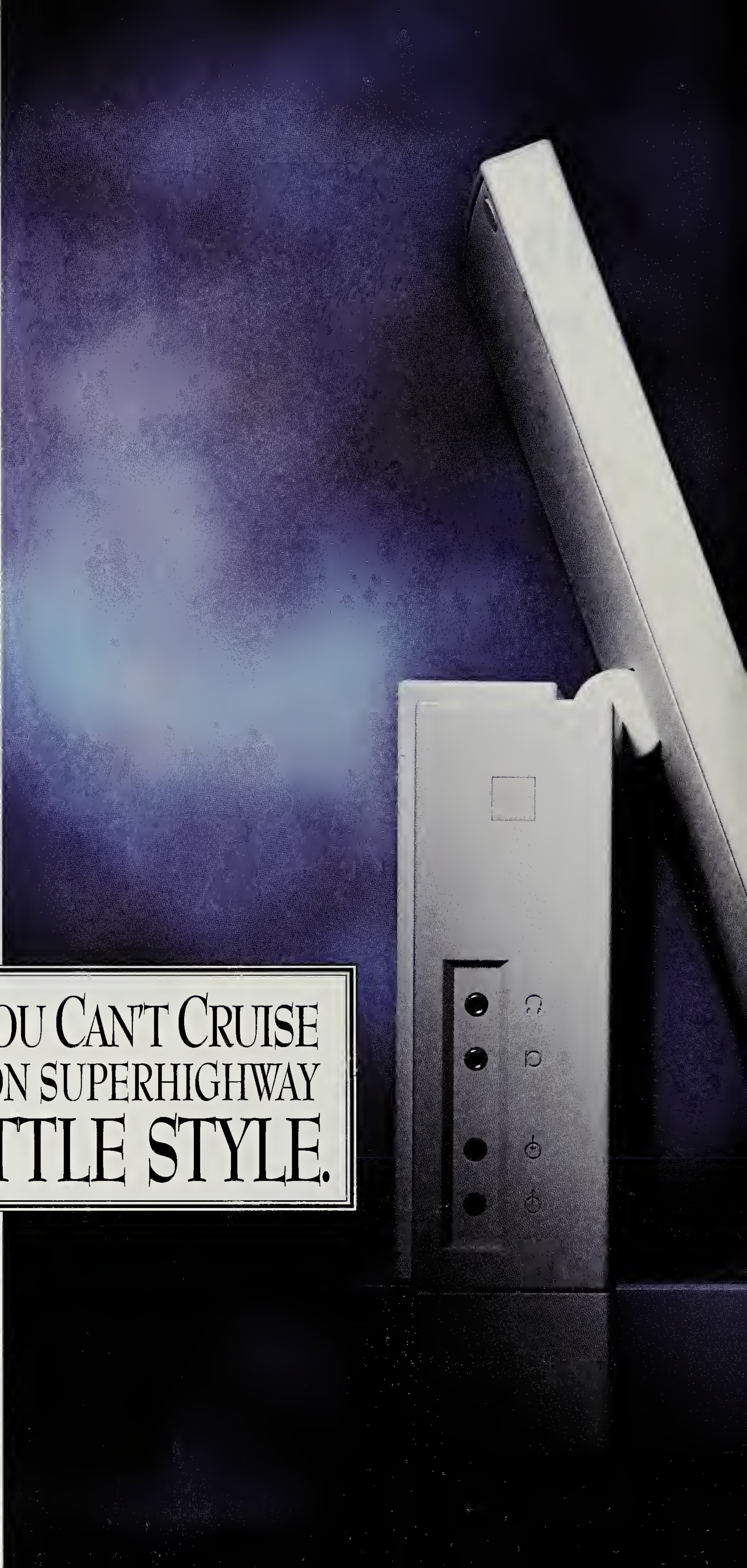

between hand-held computers, and built-in ISDN and PCMCIA card slots increase your connectivity options. ◈ Yet, for all this power, the SPARCstation Voyager occupies a tactful one-third the desk space of an ordinary workstation. It even whispers as it runs, thanks to an advanced convection-cooled design that eliminates cooling-fan noise. ◈ The SPARCstation Voyager. The consummation of advanced thinking and design that makes cruising the information superhighway not only an eminently profitable ride, but a uniquely enjoyable one, too. ◈ To learn more, cruise the net using Mosaic at http://www.sun.com/ ◈ Contact your Sun sales representative, or call 1-800-426-5321, ext. 745 for more information.

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best of breed

BY MICHAEL L. SULLIVAN-TRAINOR

Balancing **tight budgets** and targeted technology **spending** are keys to **success** for Premier 100 **companies**

Despite the high-growth, high-profile image of computer technology, life for the corporate information systems executive has never been tougher.

"CIOs face the paradox of keeping overhead costs down while providing the company with the greatest benefits of the latest technology," says Richard Swanborg Jr., managing director at Tradewinds, a Cambridge, Mass.-based IS management consultancy.

Our analysis of survey data from the *Premier 100* companies reveals that cost pressure is evident. The average budget as a percentage of revenue for *Premier 100* companies is 2% — about the same as for the 782 firms surveyed by CSC Index, Inc. in its 1994 budget survey (see chart).

For our second-tier companies — those that fell just below the Top 100 ranked by information productivity — the average budget percentage is 3%.

Budget growth, which in the CSC Index sample has steadily declined from 7.5% in 1989 to 2.3% this year, is also lower for the *Premier 100*'s Top 10 than for the rest of the 100 and those below the 100 rank (see chart).

Yet a miserly approach to IS alone fails to address the other side of Swanborg's paradox. IS executives must also help their companies capitalize on technology.

Take the case of Waste Management, Inc., ranked 20th among the 1994 *Premier 100*. The $7 billion-plus waste collection and disposal firm has steadily reduced IS spending in recent years, including a 26% reduction this year, yielding a $73 million IS budget.

"But we've been very effective in managing our portfolio of applications to increase functionality and still upgrade hardware," says computer services director James C. Murphy.

Murphy's law? Automate and focus.

"We're holding the line on personnel,

Going down

Companies with the highest information productivity spend a smaller percentage of their revenue on IS

PREMIER 100	AVERAGE 1994 BUDGET AS A PERCENTAGE OF REVENUE
TOP 10	1.3%
TOP 100	2%
BOTTOM 100	3%
1994 CSC INDEX BUDGET SURVEY	2%

(782 organizations surveyed)

Going up (slowly)

Top companies also advance their budget more slowly

PREMIER 100	1993-1994 BUDGET GROWTH
TOP 10	4.3%
TOP 100	8.4%
BOTTOM 100	10.2%
1994 CSC INDEX BUDGET SURVEY	2.3%

(782 organizations surveyed)

Stealth spending

But more money is going outside IS for the best performers

PREMIER 100	PERCENTAGE OF NON-IS SPENDING EQUAL TO IS BUDGET FOR 1994
TOP 10	22%
TOP 100	19%
BOTTOM 100	15.5%
ANALYSTS' ESTIMATES	30%-50%

illustration by MARTY GUNSAULLUS

and automation is real key to that," Murphy says. The data center is the primary focus of automation projects, which let it run more effectively with fewer staffers. The *Premier 100* companies, on average, have a low ratio (.03 to 1) of IS staffers to employees.

Sometimes the executive's balancing act is aided by business conditions.

For example, W. Ben Kuenemann, senior managing director of information services at 16th-ranked The Bear Stearns Cos., is riding the wave of 25% growth in the financial services firm's $57 billion assets from 1992 to '93 and 23% growth in its $362.4 million in profits. "We're growing so fast as a business that we're really focused on the revenue generation side as opposed to the cost containment side," he says.

But the job is subtler than blowing with the winds of financials. Keeping IS on course requires consistently tight management of the IS budget's bottom line while making discrete investments in new applications and platforms. The ability to measure return on investment (ROI) is key to this strategy. Ninety-five percent of *Premier 100* executives rated ROI measures as very important to getting project approval.

Overall, the *Premier 100* survey shows the need to keep certain new investments as high as business conditions permit while holding the lid on infrastructure growth. Hardware investments are only 15% of the budget, on average, while new development consumes more than 50%. Client/server garners 41% of system development spending.

Technology shift

Client/server investments claim a large piece of development for all companies

PREMIER 100	CLIENT/SERVER PERCENT OF DEVELOPMENT BUDGET
TOP 10	30.5%
TOP 100	43%
BOTTOM 100	41%

Although the Top 10 Premier 100 companies devote a lower percentage of their development budget to client/server, they rated it 3.9 on a five-point scale, where five is most important. The Top 100 companies rated it 3.8. The Bottom 100 companies rated it 3.9.

In addition to the resource distribution challenge, top IS executives create policies that keep their staffs and peers aimed at the right targets.

Amgen, Inc., ranked 10th, uses a highly decentralized IS structure to support its biotechnology breakthroughs, but Bruce D. Whetstone, director of corporate information technologies, does have veto power. "I don't use it as a club, but I will challenge certain acquisitions," he says.

AVOID TUNNEL VISION

Another valuable lesson learned from top IS executives is to pay attention to the architecture over the long term. Bankers Trust New York Corp., ranked 63rd, has been nurturing an architecture based on distributed computing, consistent platforms and application interoperability for 10 years.

Now, with profits up 30.7% to $996 million and assets up 27.1% to $92 billion, the bank is spending richly on client/server. The $550 million IS budget is up 18%, with 80% of the investment in new development on client/server.

"Many people equate client/server with downsizing," says Lyle Anderson, the bank's vice president of technology strategic planning. "That's not what we're doing. We're doing client/server on industrial-strength platforms and building our own middleware to allow interoperability."

Fifty-eight percent of *Premier 100* executives say architecture is extremely important to their strategies.

Yet regardless of strategy, *Premier 100* IS execs have the same objective. "It absolutely concerns me that we're making people more productive," says Patrick Zilvitis, vice president of corporate information technology at 96th-ranked Gillette Co. "If we aren't, we shouldn't do what we're doing." ☐

Sullivan-Trainor is a Computerworld *editor, CW Guide.*

pressure to produce

Is IS making us **more productive?**

The answer, **finally,** may be **yes**

BY PAUL GILLIN

illustration by LARRY GOODE

Unifi, Inc. recently equipped 20 salespeople with $3,000 worth of laptop gear each. These salespeople now have more current and relevant information available to them and can upload sales orders directly to headquarters. But has the $75,000 investment in hardware, software, support and training made them more productive?

"That's a tough one," says Jerry Moore, vice president of MIS at Greensboro, N.C.-based Unifi. "Our management has bought off on the project because the information's more timely. But I don't know that we can break down [the benefit] into dollars and cents."

Unifi's situation isn't unusual. Corporate information systems departments are finding it harder and harder to justify the productivity benefits of large projects using age-old criteria such as return on investment (ROI) or return on assets. New classes of systems projects — for example, groupware, decision support and data warehousing — are forcing the issue of how to measure benefits when the benefits are fuzzy criteria such as improved customer satisfaction.

But *Premier 100* IS departments are learning to cope. IS executives say they are relying more than ever on business unit partners to throw their weight behind systems projects, and they're learning how to use new metrics that show heretofore hidden benefits of the IS investment.

Experts say the big measurement problems stem from the question of how to measure business value. "The problem with value is that it's undefined," says Thornton May, vice president of research and education at Cambridge Technology Partners in Cambridge, Mass. "There's nowhere on your balance sheet for defining how smart your people are or how fast you get to market."

"White-collar productivity studies are almost impossible to do," says Erik Brynjolfsson, assistant professor of management at MIT in Cambridge, Mass., and author of a 1993 study on the topic. "It's hard to quantify quality, variety, customer service and responsiveness. But these are things that information technology contributes to a lot."

It's sometimes called the productivity paradox: Corporate America spent about a trillion dollars on computing in the 1980s, while nonmanufacturing productivity stayed almost flat. *Fortune* magazine opined last year that "information technology is already one of the most effective ways ever devised to squander corporate assets." The magazine pointed out that spending on IS has nearly doubled as a percentage of U.S. capital investment in 12 years, with virtually no productivity results to show for it.

SHIFTING PARADOX

However, opinion is clearly beginning to shift on the productivity paradox. Recession and global competition have forced U.S. companies to finally use the technologies they put in place during the past 10 years with corresponding productivity leaps. Business managers are more convinced than ever of the computing payoff potential.

Recent research has demonstrated that the payback is finally arriving, but *Premier 100* IS directors say the black eye IS got during the Trillion Dollar Decade, combined with tighter IS budgets in general, forces them to justify computing expenses more than ever.

"We do a strict return on investment analysis on every project over $75,000," says the chief information officer of a major Midwestern industrial company who asked not to be named.

"If we can't justify an investment on hard dollars, we get the management together and present the facts. If management buys it, we do the project," Unifi's Moore says. "But it's known up front that there aren't hard dollar returns."

But *Premier 100* CIOs also say the productivity question has become a moving target. With fewer and fewer IS projects providing simple cost savings by replacing people, savvy IS people are shifting the responsibility to end-user departments. As a result, users are increasingly paying for their own computing needs (see story page 20), and IS chargeback is staging a revival.

"We charge out everything we do," says W. Ben Kuenemann, senior managing director of information services at The Bear Stearns Cos. in Whippany, N.J. "Why should I be held responsible for the productivity of the user community?"

Like many financial firms, Bear Stearns enjoys a tight link between the IS function and business departments. "In this business, until we can automate a product, we don't *have* a product," Kuenemann says.

That makes it easier for the firm to build systems that don't have hard dollar deliverables. For example, the firm is now building a common workstation front end for its traders that has slick editing and validity checking along with automatic routing of trade orders. The payback: improved control, reconcilement and consistency but not necessarily cost reduction.

Tribune Co. in Chicago recently undertook a large database marketing system project without going through an ROI process, according to John Kazik, senior vice president of IS. Kazik says executives believe in the project on a gut level. "We just felt it was important to the future for us to have direct, targeted delivery of information."

USER ACCOUNTABILITY

The importance of business-level accountability reverberates during interviews with *Premier 100* CIOs. Too many IS directors were burned by spectacular systems failures and overblown expectations during the '80s, they say. Now the expectation is that the user should take the credit — or blame — for the payback of the project.

"We allocate [information technology] resources based on the business plan," says Don Schuman, vice president of IS at Ace Hardware Corp. in Oak Brook, Ill. "Once the officer responsible for the functional area decides this is a priority, he gets the resources to do it."

Ace has installed a new replenishment system for its 14 distribution centers, each of which stocks more than 60,000 items. The system's decision support tool is used by fewer than a dozen people and was almost impossible to justify on an ROI basis, Schuman says. The business managers had to see the value. "Did we eliminate rebuying people? No. Did we increase inventory turnover? Yes. Was it because of the system? We don't exactly know, but inventory turn did improve, and that's what counts to the business manager," he says.

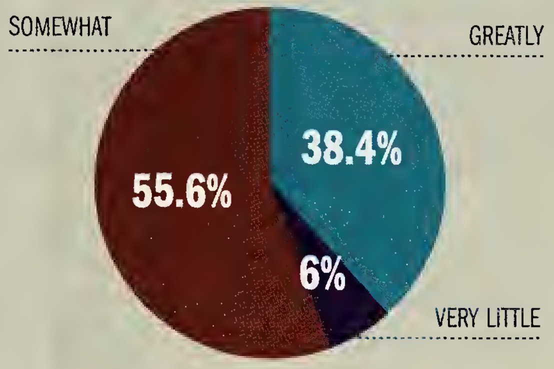
Those who believe in the IS productivity payoff generally agree that the reason the benefits of investment haven't shown up is that statisticians are measuring the wrong thing. Output of widgets per hour is a lousy measure of white-collar worker productivity, they say, particularly when corporations are automating production jobs out of existence but actually adding office staffers to administer the automat-

continued on page 12

More for the money

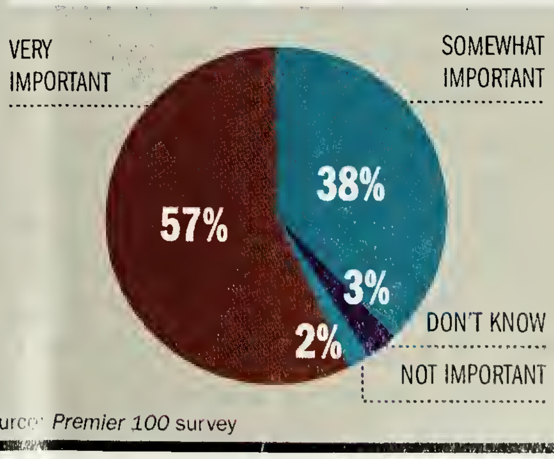
Premier 100 executives are seeing a productivity payoff . . .

How much do you think your company's information technology investment has enhanced white-collar productivity?



. . . but are still cautious in how they spend money on information technology

How important are return on investment criteria to justifying new projects?



Source: *Premier 100* survey

continued from page 11

ed systems on the factory floor.

"Our total inventory isn't down from 10 years ago, but we are carrying more products," says John Mitchell, director of IS at Cooper Tire & Rubber Co. in Findlay, Ohio. "Today, we're twice as big a company, and we carry three times as many products. Our white-collar workers do more than they used to do."

for more info

Here are some sources for more information about information systems and productivity:

"HOW TO BOLSTER THE BOTTOM LINE," by Stratford Sherman, *Fortune* (Information Technology Special Report), September 1993.

"IS INFORMATION SYSTEMS SPENDING PRODUCTIVE? NEW EVIDENCE AND NEW RESULTS," by Eric Brynjolfsson and Lorin Hitt, *MIT Working Paper*, September 1993.

"INFORMATION TECHNOLOGY AND ORGANIZATIONAL PERFORMANCE," by Vijay Sethi and others, *Information and Management 25*, 1993.

"IT ENHANCES ORGANIZATIONAL PRODUCTIVITY: FACT OR FANTASY?" by Doris G. Duncan, *Information Executive*, Sept. 22, 1991.

"SERVICES UNDER SIEGE — THE RESTRUCTURING IMPERATIVE," by Stephen S. Roach, *Harvard Business Review*, September-October 1991.

THE BUSINESS VALUE OF COMPUTERS, by Paul Strassmann, Information Economics Press, 1990.

COMPUTERS AND PRODUCTIVITY, by Michael Dertouzos, MIT Press, 1989.

"AN ASSESSMENT OF THE PRODUCTIVITY IMPACT OF INFORMATION TECHNOLOGY," by Gary Loveman, MIT Management in the 1990s program, July 1988.

One reason that criticism of IS as a financial black hole is finally softening is that the recession highlighted benefits of the information technology investment that no one had even seen before, productivity advocates say.

"I contend that all the PCs and voice mail and cellular phones and such we've installed in the last 10 years have enabled the cost reductions we're seeing throughout the country," says Tribune's Kazik. "Companies are saying we don't need all these white-collar people anymore, and that's because of information technology."

Kazik's conviction is shared by Jerry Loev, president of CSC/Impact, a new IS management consulting arm of Computer Sciences Corp. Loev says IS got a bad rap during the booming '80s — not because the productivity benefits weren't there but because there was no need to take advantage of them.

"How were we able to do all this downsizing, particularly in the middle management layers, all of a sudden?" Loev asks. "I think the answer may be that that trillion-dollar investment [in the 1980s] was worthwhile, and one reason we didn't get the payoff then was that companies didn't have to take those drastic personnel actions."

Loev contends that the flattening and decentralization that has gone on in corporate America in the past five years has been enabled by the availability of cheap, powerful technology. Moreover, computers have enabled businesses to enter new markets more quickly because of the reduced need for administrative support and the availability of better information.

What's more, the payoff usually doesn't come so much from the direct application of technology as from the process changes that technology inspires. Unifi's installation of an imaging system revealed that a large amount of employee time was being spent shuffling paper, Moore said. As a result, invoice reconciliation was shifted to an automated system.

According to Cambridge Technology Partners' May, group-oriented technologies such as LANs and shared databases can reveal assets a company never knew it had. "Companies will go out and pay high prices to get intellectual assets that they already have but don't know about," he says. "When you can now communicate point to point throughout the organization, you can find out more easily where these resources are."

Productivity figures also fail to measure opportunity costs, which CIOs say are an increasingly important driver of IS investment. "Putting in a phone line to let an outside shipper access our credit system will cost us $12,000 a year," Unifi's Moore says. "Is that worth doing? Well, one bad credit decision will cost us far more than that."

In fact, lost opportunity is becoming a major selling point for new projects. IS executives point out that intangibles such as happy customers and quick delivery times translate into repeat business and, ultimately, bigger profits. And end users empowered by decision support and analysis tools are more likely to steer companies toward new opportunities that otherwise would never have been seen.

Ultimately, a chief executive officer who is passionate about the business potential of technology is an IS manager's best friend.

"Our top management is not in love with [information technology], but they are very adamant about quality, customer service and being low cost," Cooper Tire's Mitchell says. "We pursue every investment with that in mind." ☐

Gillin is Computerworld*'s editor.*

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defying the odds

BY KEVIN BURDEN

UNIFI'S JERRY MOORE maintains a corporate philosophy that technology is a strategic tool

In the textile industry in which foreign competition has buried 80% of the U.S. firms in the past 25 years, the success of Unifi, Inc. is almost miraculous.

Ranked tops among the Fortune 500 for sales growth — 147% from 1991 to 1992 — and No. 8 for the highest total return to investors over a 10-year period, Unifi controls 60% of the domestic polyester textured-yarns market and 15% of the European market. Since its inception in 1971, the Greensboro, N.C., company has never had a losing year.

One secret of its success lies in the company's "Quality through Pride" slogan, which is fervently embraced by its 4,700 workers.

Another is fanatical devotion to cost control. In a market in which price is a major competitive factor, Unifi has consistently kept its sales and administrative expenses below 3% of net sales for several years — evidence of a very lean company that has been able to underprice most of its competition.

That attention to doing a lot with a little earned Unifi the top spot in this year's *Computerworld Premier 100*.

WEAVING SUCCESS

Unifi is riding success in polyester, nylon and cotton textiles into new markets. In 1991, the company virtually doubled in size when it bought its largest competitor, Macfield, Inc., with a $360 million stock swap. Less than two years later, Unifi entered the spun yarn market, one of its final frontiers, with the acquisitions of Vintage Yarns, Inc. and Pioneer Corp.

"With these deals, our product line is now complete, and we will probably be looking to acquire other spun yarn companies," says Jerry Moore, vice president of MIS.

While its mahogany-paneled executive suites and dress codes indicate that Unifi still clings to tradition, the company embraces an operational philosophy that is very New Age.

No. 1 **Unifi** rides the **growth rocket** in a mature industry by **challenging** convention

From the top down, technology is viewed as a strategic tool. Knowing workers can increase productivity only so much before they hit a wall, Unifi realized early on that if it were to continue its growth, it would need to do it through technology.

Unifi was the first company to install 900 meter/min. texturing in the late 1970s, an upgrade most textile compa-

continued on page 16

photograph by WILLIAM MCINTYRE

Meet a man with a clear vision.

The industry is rapidly changing. The competition is becoming intense. Your customers are demanding better, more affordable service. Your employees need faster, more efficient access to information.

Sound familiar? Throw in the fact that you've got 2.3 million customers spread over four states and you've got a typical day at the office for Dennis Walsh, CIO of Entergy, one of the largest electric utilities in the United States.

Making the decision.

When Walsh joined the company in December 1991, he saw that Entergy's mainframe/PC environment didn't allow for nearly enough interactivity and made custom-application development a slow, expensive process. He felt client-server computing was the way to go and tested configurations from several of the leading suppliers.

"We chose Sun because their technology offers the price/performance, flexibility, and tools to build sophisticated, networked business systems that will allow our employees to make faster, well-informed decisions," Walsh says. "The combination of SPARC chip technology and the scalability of Solaris software gives Sun a significant advantage over its competitors. We're very pleased with the products we have from Sun."

Making the move.

With 10,000 employees in more than 100 sites, Entergy needed a flexible, powerful information system environment— fast. They got it. And they got a pleasant surprise: They did it ahead of schedule.

"It's an astonishing effort in my mind," Walsh says. "We've been able to do things faster than anyone would have thought possible."

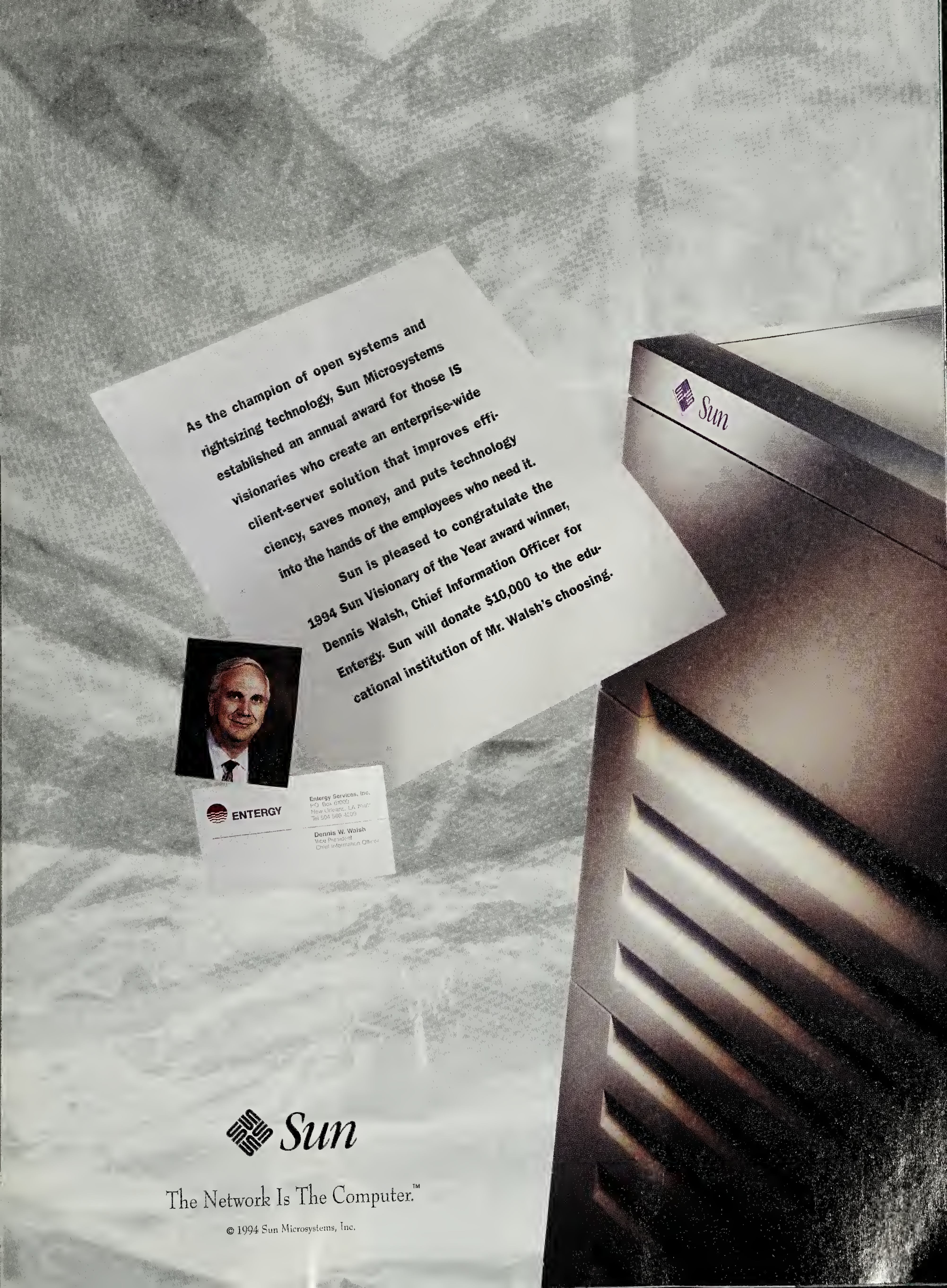
Since installing their first Sun® system in July of 1992, Entergy is currently running 33 SPARCcenter™ 2000 and SPARCserver™ 1000 systems networked to their PCs with FDDI, Token Ring, and Ethernet. So employees are now able to access, manipulate, and share information much more quickly, regardless of their location. And they're able to develop custom applications faster, keeping them a step ahead of the competition.

Walsh notes, "We're running our mission-critical applications on Sun: all our financial systems, our data warehouse, our budget system, our work-management system, and automated mapping and facilities management—everything."

Making the grade.

Typical of the man who saw how to integrate his heterogeneous, far-flung enterprise into an efficient, productive network, Walsh refuses to take all the credit. "It's easy to have a vision," he says. "You've got to have people who can deliver it."

Obviously, Entergy and Sun have just those people. "Clearly it takes a team effort to make it a reality. It's only possible with a very dedicated group of people who are willing to take prudent risks and commit to the task. And that's what has happened."



As the champion of open systems and rightsizing technology, Sun Microsystems established an annual award for those IS visionaries who create an enterprise-wide client-server solution that improves efficiency, saves money, and puts technology into the hands of the employees who need it.

Sun is pleased to congratulate the 1994 Sun Visionary of the Year award winner, Dennis Walsh, Chief Information Officer for Entergy. Sun will donate $10,000 to the educational institution of Mr. Walsh's choosing.

Sun

The Network Is The Computer.™

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UNIFI'S PREMIER TEAM (top): LaVern Payne, Jodi Foran, Steve Holley, Keith Gaskill, Richard Lucas, Chris Dorsett; (bottom): Roxann Hooks, Craig Wilson, Jerry Moore, Richard Stevens

continued from page 13

nies did not make until the '80s. Substantial modernization and plant automation investments increased yarn productivity at its Yadkinville, N.C., plant from 3.1 million pounds a week in the early '80s to 5.2 million pounds a week today with 400 fewer workers.

"We don't necessarily abandon the way things have been done in the past. We just first look for ways to take advantage of today's technology," Moore says.

"There was a time when we would have stacks of invoices lying around here," he adds. "Today, they are all scanned and can be printed on one sheet of paper if needed." Imaging technology implemented last summer eliminated much of the paper shuffling, bringing a greater level of efficiency to the company's sale and purchase transactions. "We were also able to use many employees in more meaningful tasks," Moore says.

Lean and mean

A 70:1 employee-to-IS staff ratio marks Unifi's low overhead approach

COMPANY	Unifi, Inc.
LOCATION	Greensboro, N.C.
INDUSTRY	Textiles
NUMBER OF EMPLOYEES	4,777
NUMBER OF IS STAFF	66
1994 REVENUE	$1.39B
1994 IS BUDGET	$6M
PERCENT OF SPENDING ON CLIENT/SERVER PROJECTS	28%

With a crop of IBM AS/400s running the business, Unifi has committed 28% of its new software development to client/server. "We have several scattered systems right now but are working on an overall strategy to glue them all together," Moore says.

While he has a hard time envisioning the day when client/server will replace his core AS/400s, Moore does feel it will keep him from having to upgrade to larger boxes.

The very structure of the information systems department promotes change. Take LaVern Payne, Unifi's plans and analysis manager. His sole purpose is to question processes and evaluate how new technologies might improve them.

"I have encountered zero opposition to any new ideas or technologies," Payne says. "All I ever need to do is make the business case and show how the technology applies. Once that is done, the process moves very quickly."

ACTION FIRST

The 66-member IS staff, though the largest staff Unifi has had to date, has about two-thirds the IS staffer/employee ratio that the other *Premier 100* companies have. That is part of the reason why decisions are made so rapidly.

"Benefits are visualized rather than cost-justified," Payne says. "Our IS staff is relatively small; therefore, we cannot afford to get caught up in tons of analysis."

Once Payne completes a strategic evaluation, the project is quickly handed off to the development staff. "We do not want anyone getting bogged down here," Moore says. "Thirty days after the project is done, I want . . . them out of it."

Even with the relatively small IS staff, outside service providers are used minimally. "Only if we get bottlenecked in a project or require expertise in a certain technology area that we do not have do we turn to outside help," Moore says. "Otherwise, we do everything we can in-house and try to involve as much of our staff as possible so they feel a part of the team as well as the benefits of their efforts."

Just-in-time delivery demands from retailers require that manufacturers stay in steady contact with suppliers. Electronic data interchange (EDI) has been a part of Unifi's integrated system since 1989. Today, the company is connected to approximately 200 textile manufacturers and suppliers. About 40% of outbound customer shipments and 95% of inbound go through EDI.

While Unifi encourages innovation, it is pragmatic about it. "We have two major plants, but only one of them is networked," Moore says. "Once we get the systems fully developed and know the prototype will work, only then will we tie in the other." ☐

Burden is Computerworld's *senior researcher, Firing Line/Scorecard.*

photograph by WILLIAM MCINTYRE

the rest of the best

Rounding out our Top 10 list . . .

BY RENEE BARBER

Companies ranked two through 10 in the 1994 *Premier 100* come from six industries and seven states, but all have one thing in common: cost consciousness. Here's a brief look at the IS strategies of these companies.

Illinois Central Corp.

2

The country's 10th largest railroad company is focusing new information systems initiatives on cutting costs while improving customer support. Two years ago, Illinois Central relocated its data center from Chicago to the suburbs in a move to disperse IS functions into departments and cut space costs, according to Norman Schwarz, director of technical network support. Operationally oriented transportation systems have been outsourced, a move that Schwarz says not only saved costs through consolidation but also allowed the firm to quickly add electronic data interchange (EDI) capabilities.

In April, the company installed an IBM ES/9000 (9221) and is now in the process of migrating applications from an aging IBM 3081 to the new system. A new personal injury claims database will track medical and legal cases against the firm. It is also expanding its use of handheld technologies for inventory and car repair billing information.

Expanded EDI use not only provides shipping instructions and communication between Illinois Central and other railroads but also allows shippers to dial in and run their own queries. The report is then sent to the shipper via mailbox or fax and allows the shipper to better plan production schedules.

Ambac, Inc.

3

This financial services holding company has made aggressive investments in technology recently to achieve its objective of being "the premier supplier of credit enhancement and information services within the markets in which we choose to compete," according to Chief Executive Officer Phillip Lassiter's an-

continued on page 18

FLUOR'S KEN CAIN: IS' future success depends on its ability to use infrastructure Fluor has built

photograph by LARA JO REGAN

continued from page 17

nual report message.

To support that charge, Ambac's IS department has developed systems for underwriting and surveillance, tracking new business and monitoring the firm's existing book of insured transactions. Ambac also attributes much of its success to the implementation of on-line services this year. Ambac IS executives declined to be interviewed.

Information services expenses for last year were $28.3 million, up 34% from 1992. However, much of the increase was due to Ambac's need to fund development of new product lines for Healthcare Knowledge Resources, a health care information services firm that its Health Care Information Services (HCIA) subsidiary acquired in 1992.

HCIA became profitable last year and contributed to Ambac's record net income of nearly $180 million on revenue of $327 million.

ARA Group, Inc.

4

One of the nation's largest food and diversified services firms has recently undertaken major IS initiatives designed to give business unit managers more face time with customers. The focus in ARA's food services business units is to cut administrative duties and streamline back-office work, according to John Kallelis, vice president of information technology. The company is also fine-tuning its billing system.

For ARA's food services, IS has developed a food production system that designs menus according to nutritional content, prior sales and demand. Also, IS is expanding its EDI use in its textile rental services to provide a single bill to each of its 60-plus national accounts.

A streamlining effort increased ARA's 1994 IS budget by just 2.5%, but financial support stayed strong for new software development in order to continue operational improvement. Much of IS' investment is dedicated to client/server, and its goal is to move 40% of its applications to client/server within three years.

Industry leaders

Services firms dominate the *Premier 100* list when ranked by vertical market

NUMBER OF COMPANIES	CATEGORIES OF PREMIER 100 COMPANIES
12	Financial services
11	Diversified services
10	Pharmaceuticals
8	Food
6	Commercial banks
5	Electronics
5	Savings banks
4	Chemicals
4	Retailing
3	Farm equipment
3	Metal products
3	Publishing and printing
3	Transportation
2	Apparel
2	Furniture
2	Photographic equipment
2	Plastic products
2	Soaps and cosmetics
2	Textiles
2	Tobacco
2	Utilities
1	Aerospace
1	Beverages
1	Forest products
1	Life insurance
1	Metals
1	Gold mining
1	Petroleum refining

The firm's information systems and staff are decentralized — there are only 12 corporate staffers — and Kallelis says a plan to bring business units closer together by creating "collaborative" support services throughout the corporation won't harm ARA's decentralized philosophy.

UST, Inc.

5

The $1.1 billion holding company for four wholly owned subsidiaries — United States Tobacco Co., International Wine & Spirits Ltd., UST Enterprises, Inc. and UST International, Inc. — continues to grow in a declining market. Sales increased 7% last year, and net earnings climbed to $349 million — a 12% gain.

Because it produces the dominant share of smokeless tobacco products in an antismoking environment, UST has been able to raise prices, maintain profits and increase unit volume.

Last year, UST continued to make investments in technology to improve quality and productivity. IS is responsible for developing and improving systems to monitor growing conditions and crop yields in the regions that supply the company's tobacco.

IS is also responsible for developing shipping systems that ensure distributors have the freshest possible supply of UST's smokeless brands in stock. These systems also monitor sales and inventory so that UST's products are brought to market in a timely manner.

Fluor Corp.

6

The key word at Fluor, the country's largest international engineering and construction firm, is communication. To compete more effectively in far-flung overseas operations, the company is revamping its international network. Fluor already sends some 350,000 electronic-mail messages a month. A project to expand use of Lotus Development Corp.'s Notes will grow the user base from its current size of 600 users to 8,000 during the next three years.

For the past two years, Fluor has been reorganizing IS to keep up with expanding business. All 50 worldwide offices now have a local IS manager reporting to corporate headquarters.

Director of information management Ken Cain maintains that IS' future success depends on its ability to use the infrastructure Fluor has built. Cain sees training as the key. "Instead of focusing on hardware costs, we need to focus on process cost, on training our people," he says.

Fluor is hoping to move to the friendlier Windows environment and recently staged an internal trade show to promote the move. Calling Windows an "enabler," Cain says he hopes to prod reluctant users to make the Windows jump by significantly expanding training.

MAPCO, Inc.

7

This diverse energy company is undertaking a major re-engineering initiative to become the most successful provider of quality energy and energy products.

During the past six months, MAPCO has dispersed development groups out to its business segments, which exceeded the firm's expectations for improved communications, according to Chris Scalet, vice president of IS. MAPCO has kept its shared services centralized on an IBM ES/9000 mainframe.

Currently, IS is developing a technology architecture and, to assist in the re-engineering initiative, has created a business process support services department comprised of re-engineering consultants. MAPCO hopes a new system in production will soon provide up-to-the-minute inventory and status information to shippers. The firm is "slowly migrating" to client/server, allowing vendors to lead with products that are demonstrated to be effective. Scalet says IS adopts only proved technology and lets vendors take care of most research and development.

MBIA, Inc.

8

The nation's leading insurer of municipal bonds is a "prudent company" in both business dealings and IS decisions, according to Jeff Kostiw, MBIA vice president and manager of information technology. As part of a broad move from Wang Laboratories, Inc. minicomputers to a client/server setup, MBIA increased its budget 17.5% this year. The IS function, which is now 90% centralized, will also be spread out during the next three years to bring development closer to users.

Among the projects on IS' plate right now are an accounting system to handle the increased volume of accounts for one cash management subsidiary and a fixed income trading desk to handle portfolio management.

With all that change, Kostiw says he has one big issue: "IT and the firm need to accelerate training."

U.S. Healthcare, Inc.

9

The IS department at U.S. Healthcare is now benefiting from a major initiative to boost its technology investment as it expands from its New England and Mid-Atlantic base into the Southeast. "Our systems hallmark is that we do not dabble in things. We do them in enterprise scale," claims CIO Richard Castor. Last year, its IS budget increased 18%, and there are 50 major development projects on the drawing board. Thirty percent of new development is in client/server.

IS has developed automated call centers to field the 18,000 customer calls the company receives daily, as well as EDI and imaging applications to handle 550,000 images a month. A new fulfillment processing automated system will answer customer information requests, store them in a database and automatically mail forms and letters. IS is also developing a practice management system to link doctors to the firm's patient tracking and billing. A new preferred treatment protocol system advises physicians on the latest effective treatment plans and provides pharmacists with drug use reviews.

Amgen, Inc.

10

The U.S.' largest biotechnology firm has to develop systems quickly to maintain its position in a hot market. The firm leads its industry in product launches and IS spending, according to Bruce Whetstone, director of corporate information technologies. He says the IS investment as a percentage of revenue has been almost double the pharmaceutical industry average.

The downside of the rapid growth is that Amgen has had little time to create a solid information architecture. "The one word that comes to mind to survive in this environment is 'nimble,' " Whetstone says. Flexibility at Amgen comes in the form of distributed systems spread across a decentralized organization. Whetstone directs half of the firm's IS efforts, including infrastructure and administrative systems, and the 12 business units each have their own computing manager. Whetstone handles major purchase requests. ☐

Barber is *Computerworld*'s intern.

U.S. HEALTHCARE'S RICHARD CASTOR: We do [systems] on an enterprise scale

photograph by Nick Kelsh

power of the purse

Some IS organizations are gladly giving up budget control

At Hershey Foods Corp., IS executives figure the amount of money spent on information systems outside of IS is a whopping 36% of the department's total budget.

Time was when end-user control like that would inspire terror in the minds of IS executives. But that isn't John Schniepp's attitude. "It's not necessarily undesirable," says Schniepp, who is manager of information technology technical services at Hershey Foods in Hershey, Pa.

Schniepp points out that so-called "shadow spending" often solves problems the IS department cannot address due to budgeting constraints. "Often it's a result of IS organizations not being able to bring resources to bear, so [instead] users solve the problem locally," he says.

Share the wealth

End-user IS spending as a percentage of IS budget runs the gamut at the *Premier 100*

Percentage of Premier 100 corporate IS spending controlled outside of IS department

HIGHEST 75%
H&R Block, Inc. and Avon Products, Inc.

65%
U.S. Healthcare, Inc.

63%
Advanta Corp.

AVERAGE 16%

LOWEST 0%
11 companies

EVERYBODY'S DOING IT

Interviews with executives and *Premier 100* companies indicate that Schniepp's attitude is the rule rather than the exception. Shadow spending is becoming less and less of a panic button for top IS managers.

"It's an issue, but it's not even in my Top 10. I'm not going to go around the company, beat people up and say, 'Gimme that back,' " says Bruce Whetstone, director of corporate information technologies at biotech firm Amgen, Inc.

BY DEREK SLATER

That relatively relaxed attitude is a change from even the recent past. Shadow spending has been a pressing concern for IS executives ever since the PC started sneaking onto corporate desktops a decade ago.

"It's a continuation of a long-standing issue," says Donald Broutman, a New York-based consultant at Seer Technologies, Inc. "It used to just be a small number of users."

IS HEADACHES

The basic problem is that when users start rolling their own systems, IS has to concern itself with compatibility and support issues. Another headache is the task of keeping multiple copies of corporate data synchronized.

"It does open the door to anarchy," Broutman says.

And shadow spending is clearly going nowhere but up. A recent study of 250 Fortune 1,000 companies by Dataquest, Inc. in San Jose, Calif., found that shadow spending in user departments averages about 25% of the IS budget and reaches 60% or more in some cases.

IS managers say PCs and PC software account for the vast majority of end-user technology spending. Other factors include the move to distributed computing architectures, the explosion of non-IS personnel having computer expertise and ever easier availability of software.

IS managers say all this end-user spending is not confined to a few likely suspects; it is springing up in all sectors of the corporation. Marketing and accounting departments are buying their own systems for business intelligence analysis, while engineering and research arms often build high-powered systems for tasks such as modeling or transaction processing.

Companies with extensive overseas operations have even less control over end-user spending.

Stu Dammeyer, head of North American IS operations at Reader's Digest Association, Inc. in Pleasantville, N.Y., has a fairly easy time keeping tabs on IS purchases because operations are consolidated into a single facility.

However, Dammeyer says, "We report to one person in charge of all global [information technology] decisions. If you ask him if anyone ever snuck anything into Stuttgart, you can predict the answer: Of course."

OLD MODELS OUTMODED

All these factors mean that IS must adapt, not fight.

"Five or 10 years ago, we thought we could control everything. But now there's no way in heck to keep it all under one umbrella, so you might as well give up and find another way to cope," Amgen's Whetstone says.

Whetstone says two approaches have evolved to replace the old "command and control" model as IS forms partnerships with end users.

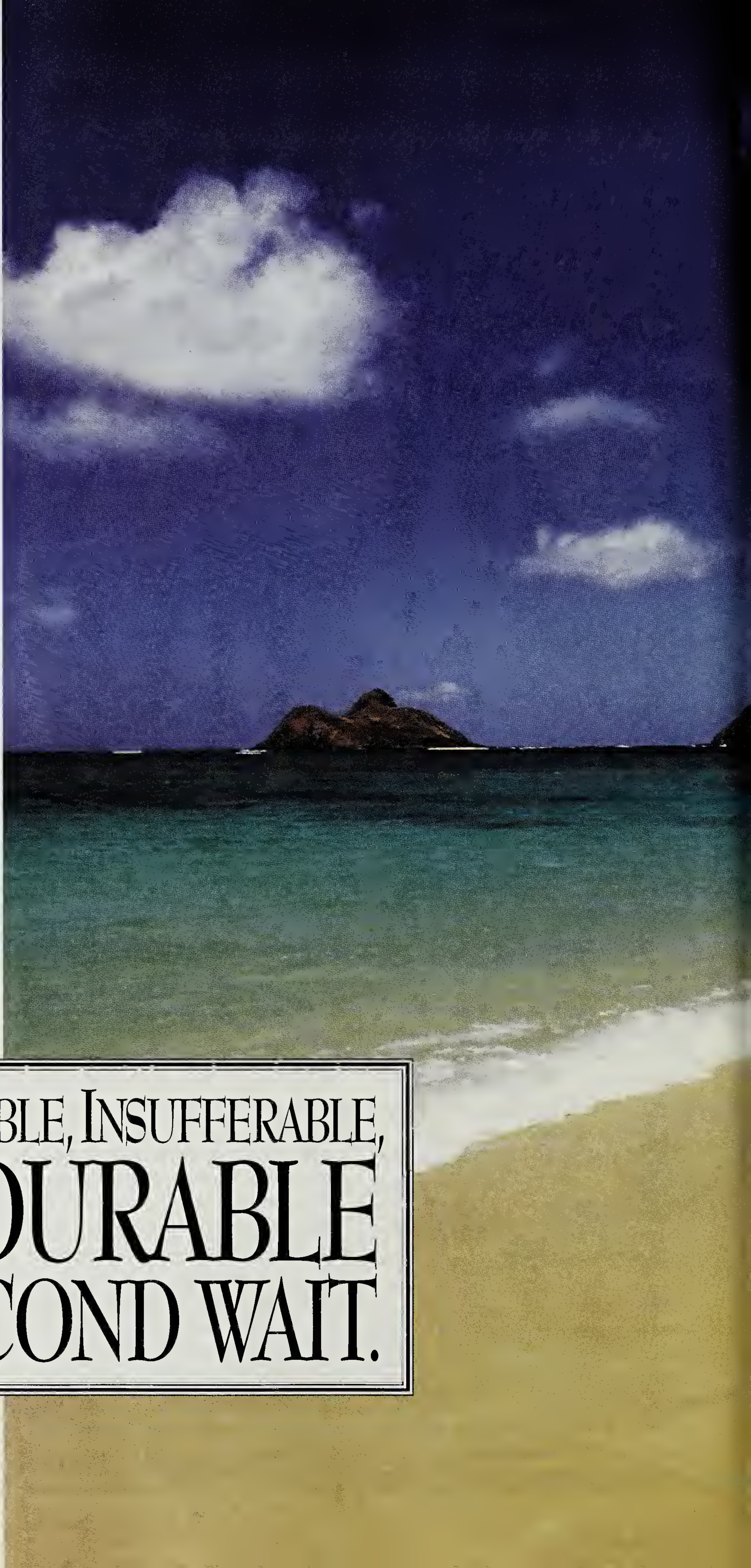
Some IS departments are molding themselves into service-oriented organizations, making themselves the best possible source for technical support

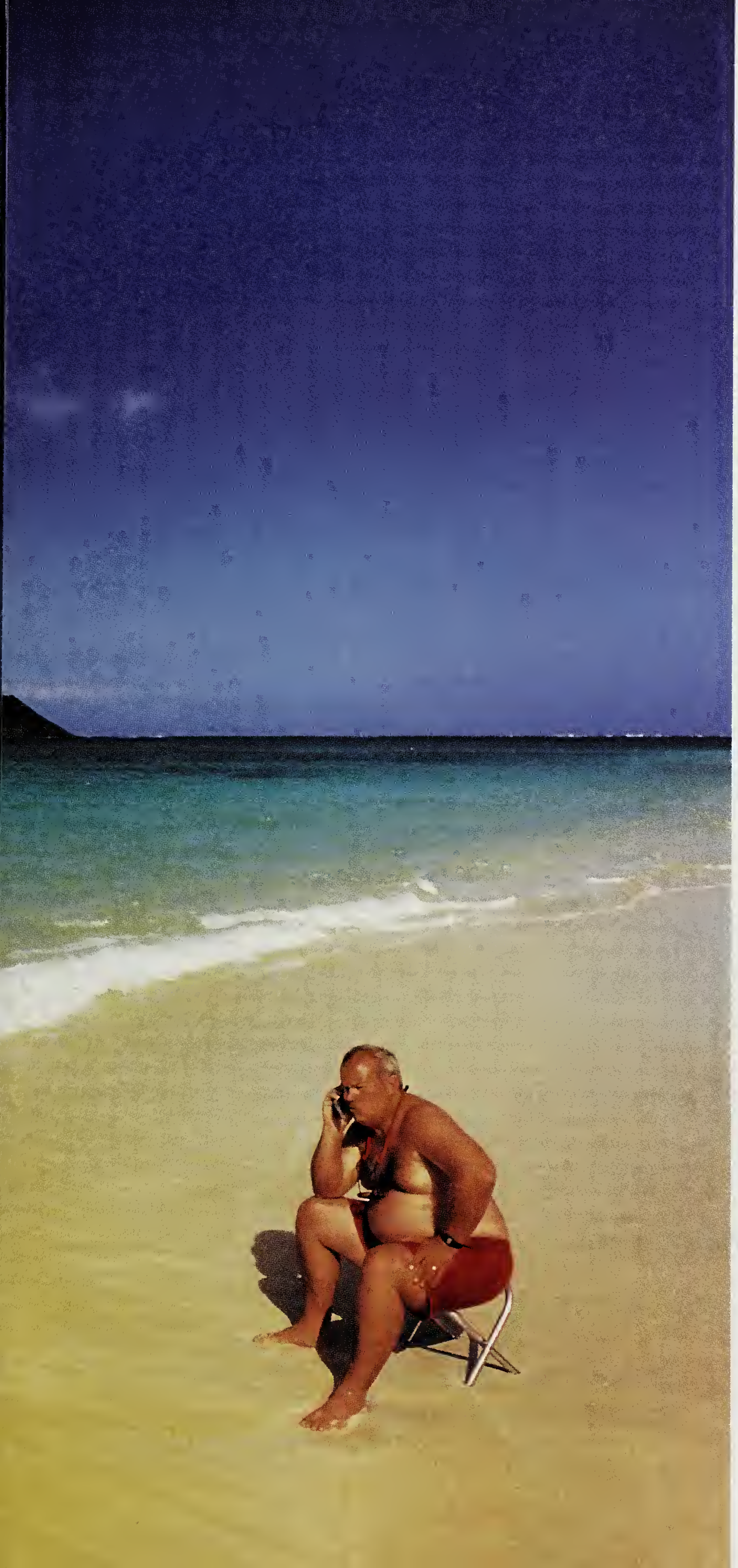
continued on page 24

illustration by JENNIFER JESSE

THE INTOLERABLE, INSUFFERABLE, UNENDURABLE ONE-SECOND WAIT.

Now! Now! Now! ◈ Does it seem that customers these days know only one word? ◈ You're not alone. ◈ Which is why more and more service companies are saying: If customers won't be flexible, the computer must be. ◈ It's what McCaw Cellular did to keep up satisfaction in a galloping business adding 50,000 customers a month. ◈ What kind of computing system can do that? Networked computing. From Sun. ◈ Sun® networked computing administers, manages, and anticipates the millions of daily calls made by McCaw customers. A "rule engine" in the management system runs on a SPARCcenter™ 2000 and automatically controls the entire McCaw cellular





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Sun

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◆ *continued from page 21*

for end users who control the purse strings.

For example, McDonald's Corp.'s computing is centralized, with perhaps 95% of all hardware and 80% of all software purchases approved by IS.

However, according to Carl Dill Jr., vice president of IS, the company is not sitting back on its heels waiting for shadow spending to take off. "We're being proactive with [shadow spending] rather than trying to police it," he says.

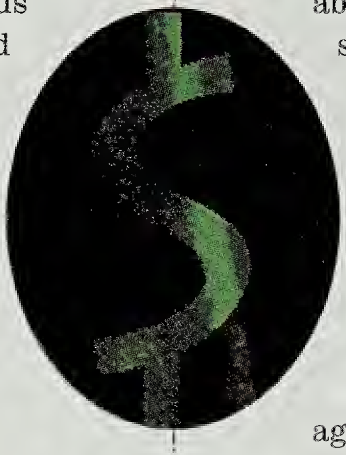
The Oak Brook, Ill.-based fast-food chain is working to implement a client/server environment that will attract end users by providing all the functionality they need. "When we have a robust environment for them to log on to, there's very little incentive for them to go in another direction," Dill says.

While the new system will put more computing power on users' desktops, it will also automate common control functions such as backup, which users tend to neglect.

Similarly, IS managers at Hershey Foods prefer education and persuasion to enforcement.

The company has procedures in place that could permit a nearly complete crackdown on end-user technology spending: Every purchase — including PCs — must get IS approval.

However, "Pragmatically, it makes [more] sense to put forth business reasons" for complying with IS preferences, Hershey Foods' Schniepp says. "We have had situations where users have decided on a product that we don't support. In some cases we've persuaded them to stick with our product, and in some cases we haven't," he says.



SUPPLEMENTAL SPENDING

The other response to shadow spending that some *Premier 100* companies have adopted is to supplement the IS budget and aggressively introduce new technologies in the corporation.

Salomon Brothers, Inc. actively uses shadow spending to alleviate pressure on the IS budget. The financial services firm reports a 50% shadow spending rate; as Salomon pushes new technologies out to the users, the costs are passed along as well.

Jill Nathanson, vice president at Salomon, explains that as the company moves to distributed computing, each department must assume budget responsibility for its own servers and PCs.

Rather than fighting the expense, user departments have responded favorably to the accountability, she says. "They feel like they are getting only their own costs" instead of helping shoulder the burden of other departments' computing needs, Nathanson says.

Salomon's central IS group still handles all management issues and purchases all networking equipment to ensure companywide compatibility.

WILLING TO PAY

End users at other companies are equally willing to shoulder greater cost when it is accompanied by decision-making power.

Sonoco Products Co. has moved all purchasing authority and expense out to the user groups, creating "an internal market economy" in which users can choose either IS or an external service provider.

Brian Westphal, a financial analyst at Sonoco, says the change has been well-received because it allows his department to calculate more exactly the cost of working with IS. "I think it has increased the level of service as well, since they are competing with outside groups," he notes.

All in all, the shadow spending issue seems to be maturing. Rising departmental spending among *Premier 100* companies now goes hand in hand with increased cooperation between IS and user departments.

"In many cases, it ties into IS departmental projects," Dammeyer says of shadow spending at Reader's Digest. In such instances, shadow spending "is more an accounting preference," he says. "It certainly isn't hidden from IS." ☐

> "**Five** or **10** years ago we **thought** we could **control** everything.
>
> But **now** there's **no way** to **keep** it all **under** one umbrella."

BRUCE WHETSTONE

AMGEN, INC.

Slater is a free-lance writer based in Ashland, Mass.

in Person

rocket man

Rockwell International's **James Sutter** finds hard times in the defense business spark productivity innovation

"**Information technology** is becoming very much **focused**, at least in our **company,** on the external **world.**"

BY CRAIG STEDMAN

James F. Sutter has been vice president and general manager of information systems at Rockwell International Corp. in Seal Beach, Calif., since July 1983. Rockwell earned $561.9 million on revenue of $10.8 billion in the fiscal year that ended in September 1993. Its annual IS budget is about $400 million.

CW How critical is IS productivity to Rockwell's business strategy?
SUTTER It's a particularly key part, given the changes in our industry. In the defense and aerospace sectors of the company, we've had some dramatic downsizing and increased emphasis on productivity.... The era where there was a lot of growth in the defense and space budgets is over, and that's a compelling driver that insists we have a high level of [IS] productivity.

CW What steps have you taken to improve productivity?
SUTTER Like a lot of large companies, we consolidated to a single data center, and the productivity yield was very dramatic. In the last couple of years, we've dropped our number of operations people by half. We've also attacked many of the things we do with automated software products. And I've been very pleased with what has been achieved in negotiating better terms with our information technology suppliers.

CW Are you seeing a payback?
SUTTER Our overall IS budget has come down slightly. It's $400 million total now, and it peaked at about $430 million. Investments on the desktop and in servers and LANs and people to support all that have in many ways offset the improvements in productivity that we've made. The major benefit has been [the ability] to reallocate the resources we apply to information technology to areas that are new. We're also giving our field force tools that allow them to link into their customers directly. To be able to fund those [projects] out of productivity improvements is vital.

CW Are the metrics that you use to measure the value of your IS investment changing as you put in client/server systems?
SUTTER That's probably the area that's hardest for senior management to get comfortable with. We have for many years benchmarked ourselves against other companies in the area of what it's costing us in the computing center for the amount of utilization of our mainframes. But if you get into software or LANs, it gets more gray. There are so many part-time participants who use a LAN that it's difficult to measure productivity.

CW Given the [industry] changes, is this a good time to be in IS?
SUTTER Businesses are dependent on information technology much more now, and they need good direction. Is it as much fun? I think those of us who have been in the business a long time have to get used to the fact that we will not have as much of a hands-on role, and we have to adapt. ☐

JAMES SUTTER: 'To be able to fund . . . projects out of productivity improvements is vital'

photograph by ALAN LEVENSON

get

BY AVERY JENKINS

SUNOCO'S TIM KAHN: EDI 'has been slow to catch on because people see it as more complex than it is'

In the Southeastern U.S., where Tulsa, Okla.-based Mapco operates a chain of convenience stores and offices, BellSouth Corp. has been Mapco's communications supplier of choice for several years.

"We do a tremendous volume with them," says Chris Scalet, vice president of information systems at the $3 billion Mapco.

And with that tremendous volume comes a tremendous amount of paperwork.

"We got reams and boxes of paper from [BellSouth] every month. Somebody had to go through all of that," Scalet says.

Recently, however, an electronic data interchange (EDI)-based re-engineering project has linked Mapco's accounting system and BellSouth's billing.

Mapco can now better analyze its communications costs and "get our people costs out of the transaction processing business and into more decision support," Scalet says. "Instead of having accounts payable clerks doing data entry, we can have them reviewing invoices and looking for irregularities and problems."

LINK UP

Mapco, like many other *Premier 100* companies, is discovering the benefits of linking to the outside world. Whether it is running complex EDI transactions or just exchanging electronic mail with suppliers and customers, electronic communications is an increasingly popular route to reducing personnel costs and better integrating information into existing information systems.

The average *Premier 100* company has 20% of its workstations connected to suppliers or customers. For some companies, particularly in the financial services industry, linkage approaches 100%.

Most of the users who were interviewed say they are growing the number of connected users but carefully. Cost and security concerns frighten some business partners, and the cost benefits of EDI in particular can be hard to calculate. IS managers point out that connecting electronically to customers can often be more expensive than maintaining the old paper-based system.

But don't look to savings on postage as

connected

the benefit of electronic linkups, they say. The big payoff is in improvements in speed, efficiency and error reduction.

"It's not a quick fix," says Roxanne Reeves, manager of the electronic commerce program at Input, a market research firm in Mountain View, Calif.

She says that to properly implement EDI, a company must be willing to change its business processes and re-engineer core applications to effectively employ EDI.

While some EDI vendors are pressing the case for EDI as an add-on to existing applications, Reeves says that approach will probably yield few, if any, benefits.

Mapco's Scalet agrees. Simply tacking an EDI front or back end on to an existing process can double the cost of transmitting the transaction, he says.

Re-engineering is a central part of Mapco's adoption of EDI. The company is currently re-engineering its data collection systems at its convenience stores to streamline and manage the flow of data from point-of-sale collection to the decision makers.

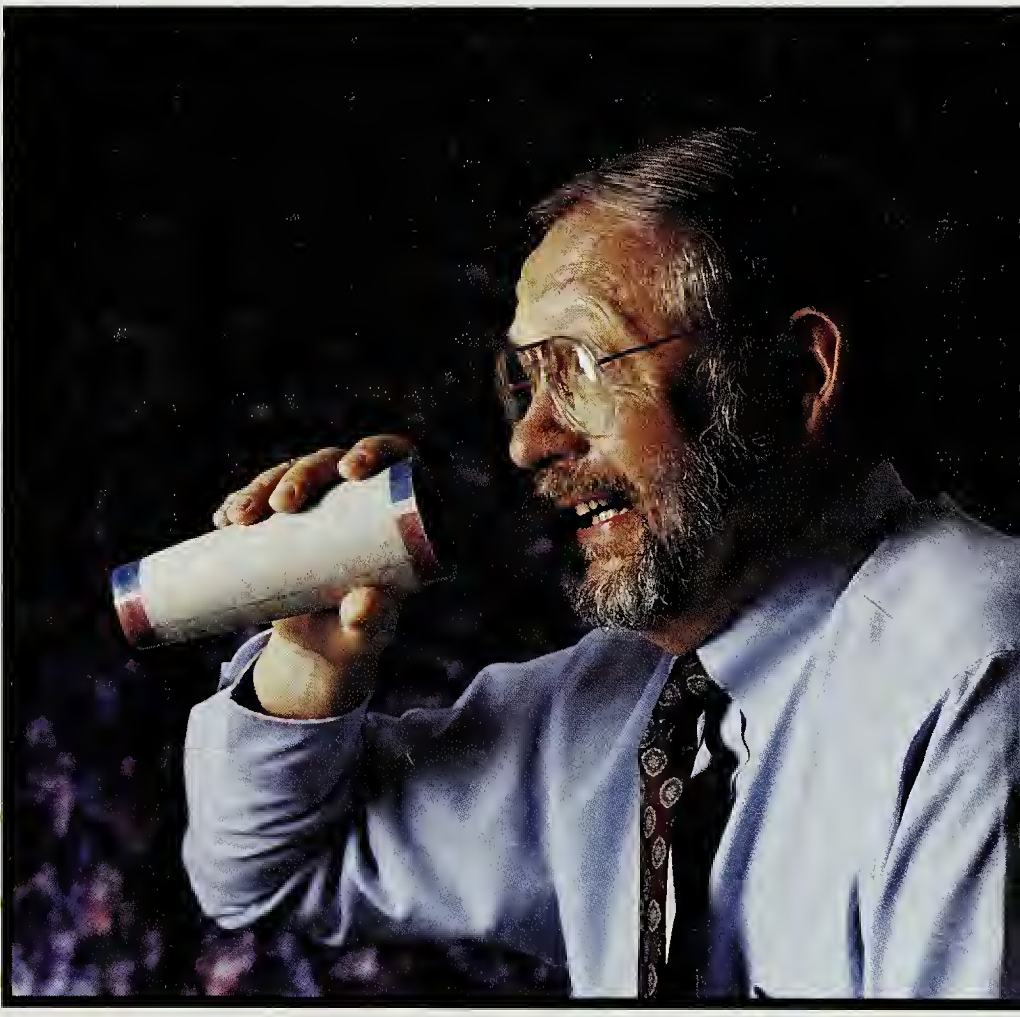
Scalet says that by moving the labor costs from transaction processing to decision support, Mapco was to free up enough manpower to justify the added per-transaction cost.

THE ADVANTAGE OF LINKS

And sometimes there's a bigger incentive for adopting electronic commerce: competitive advantage.

Electronic links to customers are "a competitive necessity" in Thiokol Corp.'s commercial business, according to Brad Stout, Thiokol's chief information officer. For example, Thiokol's $175 million Huck Manufacturing Division uses a

continued on page 32 ➧



➧ **SUNOCO'S VERN MYERS:** 'We see EDI as a key enabling technology for improving our overall logistics processes'

Links between **customers** and **suppliers** are building **virtual** corporations of the **future**

photographs by WILLIAM MCINTYRE

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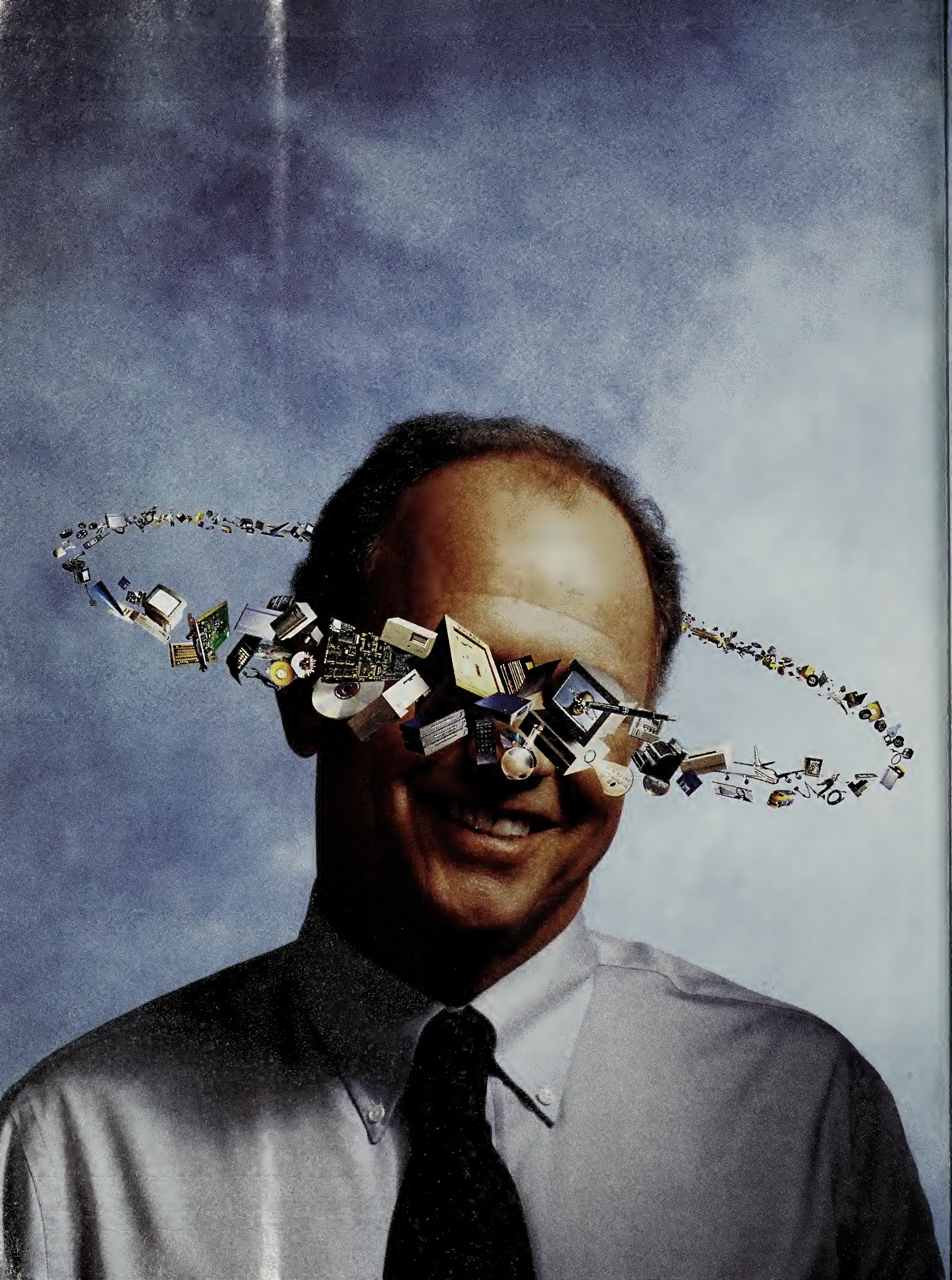

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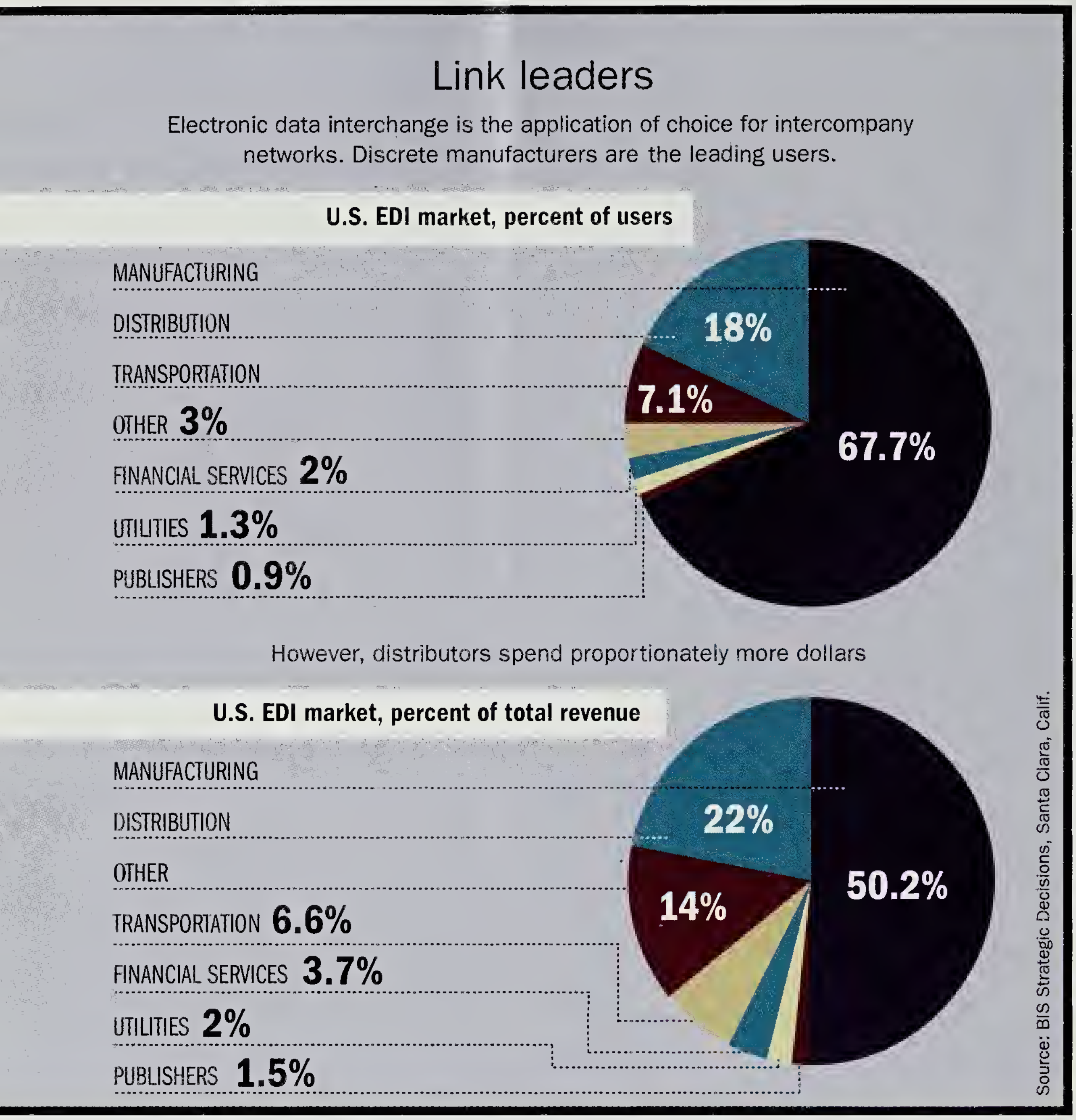


Link leaders

Electronic data interchange is the application of choice for intercompany networks. Discrete manufacturers are the leading users.

However, distributors spend proportionately more dollars

Source: BIS Strategic Decisions, Santa Clara, Calif.

◆ *continued from page 27*

just-in-time delivery system to get products to its customers.

"We got our big payoff when we integrated incoming orders onto our order management system," says Harold Borne, vice president of IS at Huck in Irvine, Calif.

Incoming EDI orders are sent to Huck's PC-based EDI translator and from there are uploaded to a minicomputer-based order-entry system. Only at that point do people come into the picture for order approval. Data entry has been virtually eliminated, and Huck is now able to fill orders faster and with less chance of error.

The system has allowed Huck to increase the number of orders it processes without increasing staff size, Borne says. More importantly, he adds, the project has satisfied Huck's drive to be easier to do business with than its competitors.

But EDI is not a panacea. Some business partners fear the technology will create security problems. Others simply don't want to spend the time and effort to learn and support it.

Greensboro, N.C.-based textile manufacturer Unifi, Inc. now manages the paperwork associated with 95% of its inbound supplies and 40% of its outbound fibers through EDI. But some of its business partners just won't use the system for security reasons, according to Jerry Moore, vice president of MIS.

Then there are the cost barriers. "Some of our smaller customers could not afford" the cost of implementing their own EDI connections, Moore says. So Unifi doesn't force the issue. "It's available, but we aren't going out and aggressively pushing it," he says.

In addition, users say EDI is difficult to justify on paper savings alone. The big payoff comes in manpower reduction and improved integration of billing information into corporate order entry, billing and accounts payable systems.

Sonoco Products Co. in Hartsville, S.C., has recently incorporated EDI into its bills of lading and payment processes to reduce labor-intensive accounting. Today, savings amount to 70 cents or 80 cents per document, or $40,000 per year, through EDI, according to Tim Kahn, Sonoco's manager of EDI.

Adds Vern Myers, corporate global traffic manager, "We see EDI as a key enabling technology for improving our overall logistics processes."

Unifi's Moore says, "I have two people processing $750 million in invoices per year."

PART OF DOING BUSINESS

In some industries, electronic customer linkups are simply a way of life. A big portion of The Bear Stearns Cos.' business is clearing trades for some 1,600 other trading firms. Customers download their files, and Bear Stearns handles the clearing process.

"In the volumes we handle, the only way we could do it is electronically," says Ben Kuenemann, senior managing director of information services.

Bear Stearns has profited from taking the in-house system it developed to clear trades and making it available to other traders.

Yet despite the inherent difficulties — political, financial and technological — these users say the migration to EDI is worth the effort.

"EDI is like a little piece of cheese in a sandwich," Input's Reeves says. "You may not see it, but without it things aren't going to work."

"It has tremendous benefits, but it's been slow to catch on because people see it as more complex than it is," Sonoco's Kahn says.

"We see EDI as not an end in itself but as a way to facilitate strategic partnerships," Thiokol's Stout says. "We have more and more alliances where EDI is going to be an integral part of that relationship." ☐

Jenkins is a free-lance writer based in Ansonia, Conn.

in Person

bullish on technology

Merrill Lynch's
Howard Sorgen
keeps investment firm's
eye on the ball

> "**There's** never been a more **challenging** time or more **opportunities** to do good things in **delivering technology.**"

BY CRAIG STEDMAN

Howard P. Sorgen, 55, is senior vice president and managing director of global systems and technology at Merrill Lynch & Co. in New York, which earned a $1.4 billion profit on net revenue of $10.6 billion last year. Its annual information systems budget is about $900 million.

CW You've consolidated 11 data centers into two in recent years. What else have you done to improve IS productivity?
SORGEN We standardized software [across operations], so between both the physical and logical consolidations we tore out a lot of facilities and removed 40% of the work force in the host-based processing environment. We also took all of the application development people responsible for host-based production systems and put them in one central group. That's dramatically reduced the cost of maintaining the production systems as well.

CW You also centralized other parts of IS to regain control over the cost of departmental projects. Is that working?
SORGEN A year ago, we took all of the groups that were dedicated to developing applications for specific business units and put them together. . . . In effect, we've gone back to basics. We're now heavily centralized. The cost savings has been that we don't have to build utility-type functions for individual units. We operate from a common pool.

CW How much money have you saved with all the changes?
SORGEN I would look at it more from a reinvestment standpoint than a pure reduction. We saw that we were going to migrate to client/server platforms and felt it was incumbent on us to self-fund part of that investment by reducing the cost of the host-based processing environment. We actually reduced our [mainframe] cost base 45%, but we reinvested [about half] of that into client/server.

CW Your IS head count has come down from about 3,000 to 2,100. Are more reductions planned?
SORGEN Actually, we see that number going up before it comes down. We're rolling out more and more [client/server] applications as we speak, and human resources to support that are an ongoing need. But the budget is likely to remain flat as we rip out infrastructure. We need continuing cost reductions, so we don't go hog-wild as a percentage of revenues.

CW Is this a good time to be in IS?
SORGEN I think there's never been a more challenging time or more opportunities to do good things in delivering technology. But I've seen a lot of trepidation on the part of CIOs. A lot of CIOs have accepted caretaker situations and been reluctant to step up to the plate and do the job they're supposed to do, [which is] to manage applications development and deliver those to your customers. They become a "facilitator," or something like that. Those words mean nothing to me. They don't accomplish anything. ☐

HOWARD SORGEN: 'We've gone back to basics'

photograph by JOHN RAE

CIO JAMES MARSTON AND CEO JOHN LILLIE of American President Cos. occupy cubicles on the re-engineering front lines

Talk about close: When James S. Marston wants to talk with his boss, he needn't trudge to the executive suite or call days ahead for an appointment.

Instead, Marston, chief information officer at Oakland, Calif.-based American President Cos., walks a few steps and sticks his head into a nearby cubicle.

"I've been spending three or four hours a day down here with the re-engineering team," says John A. Lillie, chairman and chief executive officer. The $2.6 billion international transport company is redesigning its entire business, from order entry to service. "Jim and I sit close together."

What's this? Top executives and CIOs as cube neighbors? Aren't most CEO/CIO relationships more like king and royal alchemist — an arm's-length mix of mutual dependency, suspicion and bewilderment? Not if you look at this year's *Premier 100*.

Some of the fastest-growing, most innovative (and profitable) global companies feature cheek-to-cheek partnerships between the information systems head and the big boss.

Whether such a setup thrills you or terrifies you is another matter. But those involved say the arrangement works smashingly. Drawing IS into the inner circle, they say, can reduce miscommunication, improve credibility and alignment for IS and, ultimately, boost the bottom line.

"We regard technology as an opportunity to gain competitive advantage," Lillie says of his 6,000-employee firm. Marston sits on the company's executive committee alongside five other top operating and administrative executives.

How do these happy couples not only avoid bites and burns but also steer some of the nation's most technology-savvy companies?

- **The right environment.** Before they can stay close, executive partners must get close. Often, that means a flat company in an information-intense industry such as finance, health care or transportation.

Company culture must also be right. Take Nalco Chemical Co., a

Knowing who's boss

Here's a sampling of *Premier 100* companies in which the CIO reports to the top boss

American President Cos., RANK 44
James S. Marston, Senior V.P. & CIO
John M. Lillie, Chairman, CEO & President

First Virginia Banks, Inc., RANK 85
Shirley C. Beavers Jr., President
Robert H. Zolokar, Chairman & CEO

GEICO Corp., RANK 38
Simone J. Pace, Senior V.P. & CIO
O. M. Nicely, CEO

H&R Block, Inc., RANK 45
Judy Keisling, V.P., Information Services
Harry Buckley, President & CEO

IDS Financial Corp., RANK 73
Jack Thomas, Senior V.P., Information & Technology
Dave Hubers, CEO

Johnson & Johnson, RANK 51
Ronald Morris, V.P., Information Technology
Ralph Larsen, Chairman & CEO

MBNA Corp., RANK 83
Ronald W. Davies, Vice Chairman & CTO
Charles M. Cawley, Chairman & CEO

Merrill Lynch & Co., RANK 29
Edward L. Goldberg, Executive V.P.
Daniel P. Tully, Chairman & CEO

Reader's Digest Association, Inc., RANK 93
Kenneth A. Nelson, V.P., MIS
James P. Schadt, COO/CEO

Tribune Co., RANK 92
John Kazik, Senior V.P., Information Systems
Charles Brumbeck, Chairman & CEO

United Healthcare Corp., RANK 49
James P. Bradley, Senior V.P. & CIO
William McGuire, CEO

happy together

These **lucky CIOs** report **directly** to the **top** boss. But **success** requires **poise and personality.**

BY JOSEPH MAGLITTA

$1.5 billion specialty manufacturer in Naperville, Ill. A quality program begun in 1987 "has encouraged much more open communication," says CEO Edward "Ted" Mooney.

Mooney credits quality "culture" with opening channels between IS and top management, sales, marketing and research and enabling a $10 million effort to equip 2,000 Nalco sales representatives worldwide with a laptop-based analytical system.

The approach seems to work: Mooney and David R. Bertran, Nalco's senior vice president of manufacturing, logistics and IS, last year won the prestigious Society for Information Management "Partners In Leadership" award for outstanding teamwork. (JC Penney Co. was a co-winner.)

- **Common ground.** Whether it's technically astute CEOs or IS chiefs with business credits and training, top partnerships require some meeting in the middle.

Kenneth A. Nelson, vice president of MIS at Reader's Digest Association, Inc., rose through the technical ranks at Mars, Inc. and eventually ran a business unit worth "several hundred million."

Since 1991, he has worked alongside Reader's Digest CEO James P. Schadt at the $4.5 billion global publisher. Nelson calls the technology shots on a massive global database of 100 million names — a key strategic asset for the Pleasantville, N.Y., company. "I'm always thinking very much as a business manager," he says.

Similarly, James P. Bradley headed a large health maintenance unit for Aetna Life and Casualty Co. before becoming senior vice president and CIO at United Healthcare Corp. "If you don't know the fundamental drivers, you limit your effectiveness and thus your relationship with the CEO," he says.

On the flip side, it doesn't hurt to have a boss who's not tech-shy. Take American President's Lillie: In the 1960s, he programmed punch cards at Boise Cascade Corp. Today he uses electronic mail and Microsoft Corp.'s Word and likes to tinker with a Macintosh multimedia computer at home.

"An employee once referred to me as a hacker," he says proudly.

- **Good personal fit.** The right resume and culture can get you onto the executive committee. But what if you're a dud?

"With a good personal fit, you could be down a notch or two in the organization and still be effective," Marston says.

But it doesn't hurt to be a bit cheeky. "I can't tell you [CEO William E. Guire] and I don't argue," Bradley admits. "I've always found it easier to ask forgiveness than permission."

And surprise: Tight CEO/CIO teams often seem less concerned with strict return on investment. How technology will advance business goals is often a bigger concern. Gut feel isn't unheard of.

"What got us from $1 billion to $5 billion in annual sales in five years wasn't a bureaucratic capital expenditure committee," Bradley says.

While CEOs and CIOs say drawbacks to tight partnerships are few, they don't ensure perpetual technological bliss. For example, Nalco's initial laptop pilot flopped. Problem: Reps hated the canned software.

In addition, highly-placed IS heads still must gain the respect of other top managers. And that, they say, can be tougher than currying the boss' favor.

"You can be well-positioned in the organization," American President's Marston says. "But if you can't work yourself into the confidence of senior people, you don't have a chance to survive. They can shut you out with the speed of light." □

Maglitta is Computerworld's *senior editor, Corporate Strategies.*

photograph by WILLIAM MCLEOD

in Person

IS in his genes

A **hands-off** approach **helps** Amgen CEO **Gordon Binder** turn molecules into **money**

BY JOSEPH MAGLITTA

At Amgen, Inc., the nation's largest independent biotechnology company, Macintosh computers outnumber employees: 3,600 vs. 3,000. "Amgen runs on PCs," says Chairman and Chief Executive Officer Gordon Binder.

Indeed, the Thousand Oaks, Calif., company lives or dies on technology. Amgen scientists use molecular biology and state-of-the-art systems to create highly specialized health care products. Its biggest sellers — an anemia fighter called Epogen and Neopegen, an anti-infection agent — were created using sophisticated recombinant DNA techniques.

Since Binder became CEO in 1988, Amgen's annual revenue has shot from $200 million to $1.3 billion. Net income has tripled. Amgen now boasts offices in North America, Australia, Japan, Europe and Hong Kong.

CW Many of your CEO peers are pretty skeptical about technology boosting productivity. You, too?

BINDER Ten years ago, if you walked through one of our labs, you'd see scientists at benches running experiments. If you walk through one of our labs today, you'll see pieces of scientific equipment hooked to a PC, chugging away, while the scientist is away researching data. A lot of this stuff can run all night long. Information technology certainly improves productivity for us.

CW How?

BINDER Nobody makes a mistake entering data, for instance, because statistical analysis programs make the charts. And we have over 24 buildings here, so we save a lot of walking between.

CW Most CEOs also swear that technology is pivotal to business. Is that true for Amgen? Why?

BINDER We have thousands of patients in clinical trials; all sorts of data is collected on each one. Each of these pieces of data has to be analyzed and reconciled and reported to the FDA. We couldn't begin to do that without computers.

CW What's your approach to corporate technology use?

BINDER Even before I joined Amgen in 1982 . . . it was clear that the cost of hardware was coming down rapidly and the cost of software was going up. Information technology salaries were also rising. So the idea of picking the hardware first — and in doing so making the more expensive people and software inefficient — struck me as funny.

CW How is that philosophy played out at Amgen today?

BINDER From the very beginning, each major area of the company has had the freedom and finances to acquire and run its own hardware and software. We say: "Get what you want and need." The marketing department, for example, can spend more on ads or the sales force or information technology. It's up to them.

CW How does Amgen judge if an IS project is worth the money?

photo illustration by M.A.D.

“If the head of **accounting** came to me and said he **didn’t have** the **software** he needed, I’d say **‘Why don’t you get it?’** End of meeting.”

BINDER We have case-by-case guidelines. A lot of [return on investment] calculations are pretty off. How do you measure improved sales force productivity? I find if the salespeople thought it was great and the national sales manager thought it was great, it probably is great.

CW That’s a lot of power for business departments. How has it worked out?

BINDER It varies from group to group. If a function head is very information technology-oriented and very aggressive, they will have a very sophisticated information technology setup. The weaker ones need more help.

CW You have a chief information officer and a 70-person corporate IS function. Where do they fit in?

BINDER [CIO Bruce D. Whetstone] installs systems and gets them running but without ownership. Bruce provides [air-conditioning], fiber cable, interoperability and connectivity for remote sites and overseas operations. He also has major training responsibility.

CW How do you see your role in IS? The CIO’s?

BINDER We make it easy for people to run the major departments. Our roles are quite often the same: We deal with very basic policy issues, very broad guidelines. It’s up to Bruce [Whetstone] to get new tech opportunities to all the people and to pour cold water on fancy new ideas that don’t make any business sense. Computer security is a special hot button I get involved in.

CW You’re the leading firm in a young industry that has no IS tradition or legendary systems. Does that help or hinder?

BINDER I’m not sure we’ve gotten any real benefit from the information technology tradition. We tend to be pioneers rather than copiers. We’ve built our infrastructure from the ground up.

CW How does company culture impact IS?

BINDER We tend to be very science-oriented in everything we do. We think everybody in the company can run experiments, not just people in the labs. Information technology experiments are built into the culture. We’re also a company full of relatively young people who are receptive to new things.

photograph by M.A.D.

CW Are you a techno-fan, technophobe or something in between?

BINDER I’m really not a technology user. I see things better on pieces of paper, even though some come out of a computer. I look to put notes on these [sheets] in the margins and send them back. Plus, I travel a lot. It doesn’t make as much sense for my particular work.

CW You’ve been in business since 1957. Any areas where computing professionals consistently don’t get it?

BINDER I guess my biggest criticism is that some information technology people weren’t user-friendly. They tended to have their own agenda more than they should. They’re not as service-oriented as they should be.

CW The notion that IS can provide a competitive edge has suffered recently. Do you agree?

BINDER Increased productivity is a competitive advantage. It takes eight to 10 years to get a molecule to market. Every time we knock off another day, we have a better chance of being the first to get a patent to market. That can mean the difference between a lot of sales and no sales. □

Maglitta is Computerworld*’s senior editor, Corporate Strategies.*

feelin' groovy

Budget and user pressures aside, Premier 100 IS departments are a confident group

BY PAUL GILLIN

Premier 100 information systems departments are learning to live under a microscope. Our annual survey of the Premier 100 demonstrates clearly that corporate management is watching IS groups more closely than ever. Increasing demands from the user community, tighter budgets and the need to cost-justify project investments are forcing IS departments to put up or shut up. Fortunately, most believe they're doing a pretty good job of putting up.

"Over the last several years, our back office is probably handling two to three times the volume of trades with 75% of the people," says W. Ben Kuenemann, senior managing director of information services at The Bear Stearns Cos. in Whippany, N.J. "That's got to mean something."

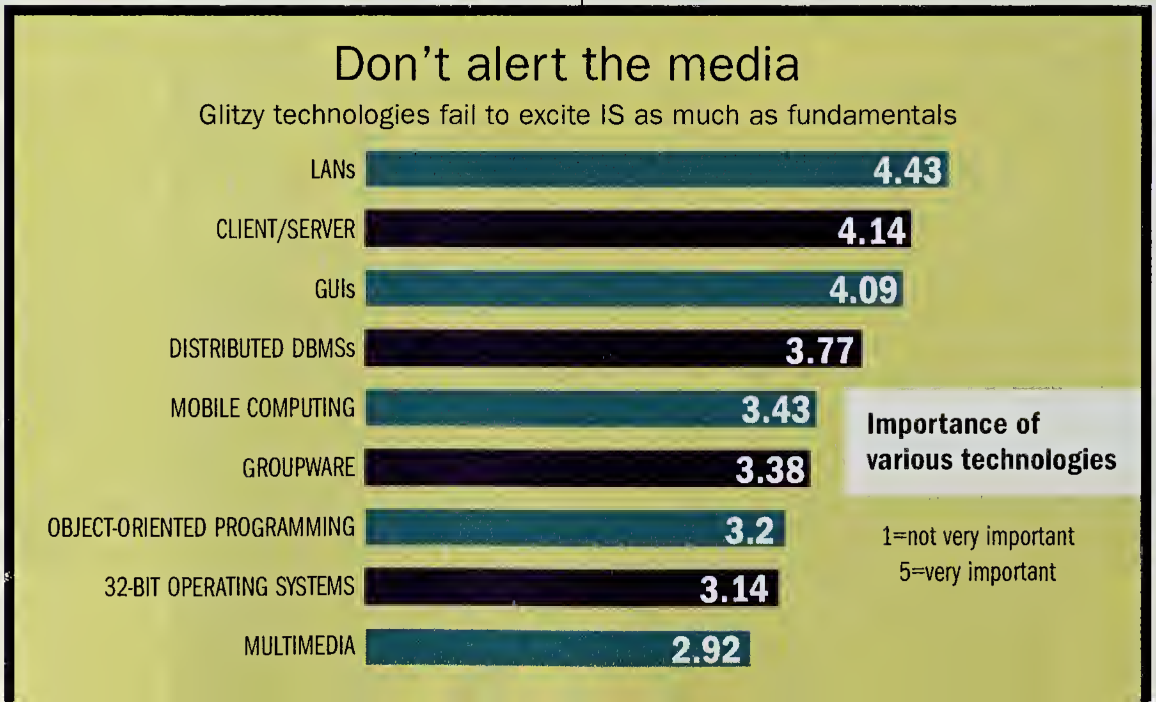
What it means is that *Premier 100* CIOs are confident that the productive value of the IS investment is tangible, but they expect benefits to show up in business results. Just spending money on computers isn't enough. The executives are inclined to experiment more with organizational changes than with technology, moving their people closer to the business units and forcing more decisions out to the end users rather than hard-coding the information flows that already exist. They are also inclined to look at outsourcing as a strategic option rather than as a political threat.

The *Premier 100* companies are also a pretty cost-conscious group, judging by their approach to cost justification. Fully 95% of the respondents said return on investment (ROI) measures are very important or somewhat important to getting a project through the corporate approval cycle.

"We do an ROI on every project," says Patrick Zilvitis, vice president of corporate information technology at Gillette Co. "Our whole [information technology] strategy is to support the business strategy and improve value to shareholders."

SKY'S THE LIMIT

However, Zilvitis, like other managers, says Gillette is not pinching pennies when it comes to projects with big potential strategic payoffs. Other *Premier 100* executives agree. When we



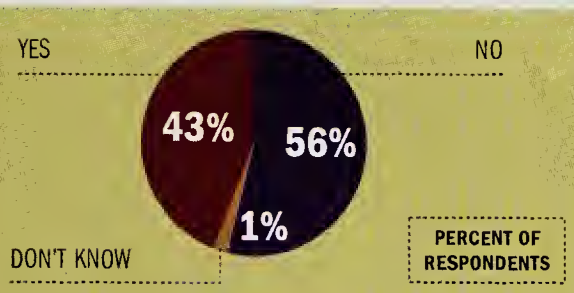
Don't alert the media

Glitzy technologies fail to excite IS as much as fundamentals

Reinventing IS

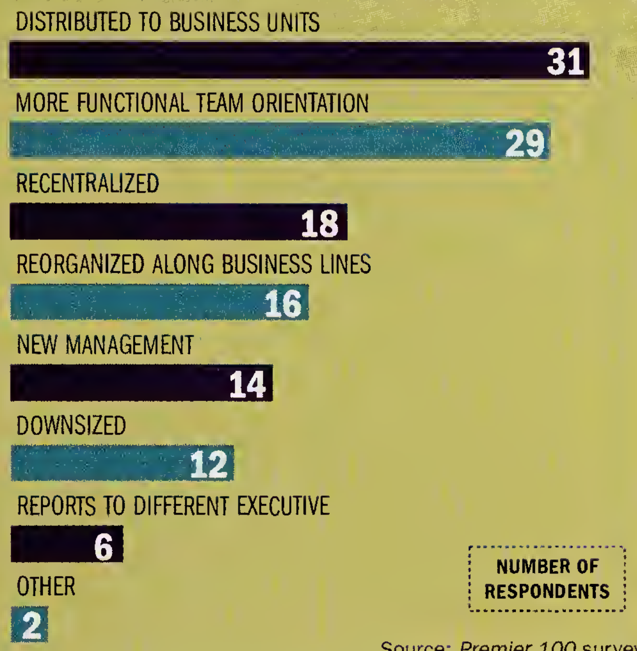
Pressure to perform is pushing groups to realign themselves . . .

Has your IS department been altered to better align with business needs?



. . . but along very different lines

How has the structure of your IS department been altered during the past year?



Source: *Premier 100* survey

asked what management attitudes were toward IS investments, seven out of 10 executives said management is investing, although generally with cost-justification criteria. Only four of the companies said management is in an active cost-reduction mode.

PAYOFF TIME

And they clearly believe the payoff of that investment is emerging. Asked whether spending on IS is enhancing white-collar productivity, 93 of the 99 people who answered the question said yes.

One reason the benefits may be showing up is an intensified focus on revamping business processes through IS instead of just automating what's there.

The survey results indicate that the re-engineering phenomenon is catching fire, with 74% of the respondents saying they had re-engineered or redesigned some business processes in the past year to exploit technology. Sales and marketing functions are the beneficiaries of the bulk of that effort. Fully half the *Premier 100* are involved in some kind of sales and marketing retooling.

That's in line with the new image of IS as a product line developer, according to Thornton May, vice president of research and education at Cambridge Technology Partners in Cambridge, Mass. "Your old-line CIO was basically somebody who managed budgets effectively," he says. "You're now putting in place an entrepreneur who can grow the business."

APPEASING TOP BRASS

The results testify to the importance of satisfying top management. While the majority of the survey respondents said scrutiny of IS by top management and shareholders had not changed during the past year, a sizable minority (40%) said it had increased. Only four of the 100 respondents said the pressure had lessened.

However, increasing scrutiny is a half-empty/half-full proposition.

Some IS managers relish the idea of top management attention because it allows them to show off the value they can add to the business. "Senior management feels strongly that technology is important to move forward," says John Kazik, senior vice president at Tribune Co. in Chicago.

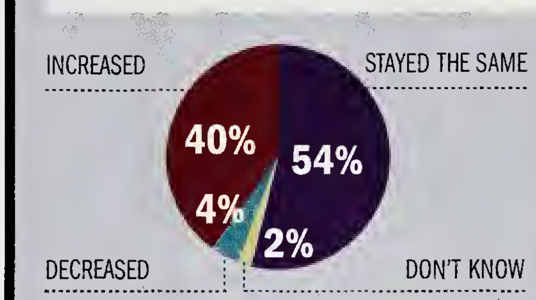
IS groups are also reorganizing themselves, but there's hardly agreement among them on which way to go. Forty-three percent of the groups have undergone some kind of organizational change in the past year to better respond to business needs.

Of those who have rejiggered, nearly a third have been distributed into the business units. However, nearly one in five has actually been recentralized to achieve economies of scale and to cut costs.

Best behavior

IS departments are under the microscope

During the past year do you believe that the degree of scrutiny of IS by management and shareholders has increased, decreased or stayed the same?



Source: *Premier 100* survey

The contradiction may reflect the push/pull many IS departments are facing today: Get closer to the users but do more for less money.

Gillette's IS group is one of those that's spreading out to get closer to the customers. Many of the IS staffers now report directly into discrete business units with dotted-line responsibility to a central function, Zilvitis says.

"My staff has diminished considerably, but the function is now spread throughout the company so we all work together," he says. "In these days of self-empowered teams, you no longer can judge your position by how many people directly report to you." ☐

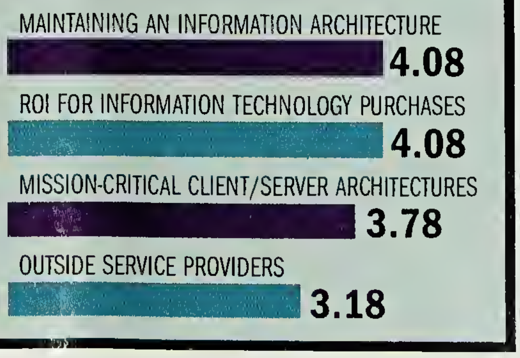
Gillin is Computerworld*'s editor.*

Planning and execution

Premier 100 executives say no project is executed without a plan

How important are each of the following to your company?

1=not very important 5=very important



star performers

In the **IS productivity game,** these players **finish** well **ahead** of their peers

BY KIM S. NASH

Lapping the field

These *Premier 100* companies boast the biggest lead over their industry peers in the Information Productivity Index

	Transportation	**Rank**
COMPANY	Illinois Central Corp.	2
CLOSEST RIVAL	American President Cos.	44
	Soaps and cosmetics	
COMPANY	International Flavors & Fragrances, Inc.	15
CLOSEST RIVAL	Avon Products, Inc.	98
	Farm equipment	
COMPANY	Briggs & Stratton Corp.	28
CLOSEST RIVAL	Stewart & Stevenson Services	91
	Beverages	
COMPANY	Coca Cola Co.	33
CLOSEST RIVAL	Whitman Corp.	106
	Publishing and printing	
COMPANY	Gannett Co.	37
CLOSEST RIVAL	Tribune Co.	92
	Life insurance	
COMPANY	IDS Financial Corp.	73
CLOSEST RIVAL	None in Top 230 companies	NA

When it comes to those great smells that remind you of a new car, a pine tree or a fun summer at the beach, International Flavors & Fragrances, Inc. (IFF) stands out from its competitors. With more than 80,000 recipes on file, IFF is the world's leader in the synthetic taste and smell market.

The company is also notable for finishing far ahead of its industry brethren in information systems effectiveness using the *Premier 100*'s Information Productivity Index.

Information productivity, used to rank the *Premier 100*, rewards companies that achieve a high level of productivity for low overhead or management cost, or those that do more with less. This year, IFF and five other highfliers finished well ahead of their industry peers in information productivity rankings. The others include publisher Gannett Co., financial firm IDS Financial Corp., transportation company Illinois Central Corp., heavy manufacturer Briggs & Stratton Corp. and Coca Cola Co. The latter two declined interviews, citing state secrets.

Without exception, every IS scheme these companies hatch is predicated on knowing and serving clients better. But they also emphasize tangible bottom-line benefits from IS spending.

Wariness of investing in the unproved is indicated by a rather blase view of client/server at these firms. Briggs & Stratton allocates about 20% of its new software development to client/server, while Illinois Central says it devotes just 10%.

SECRETS OF SUCCESS

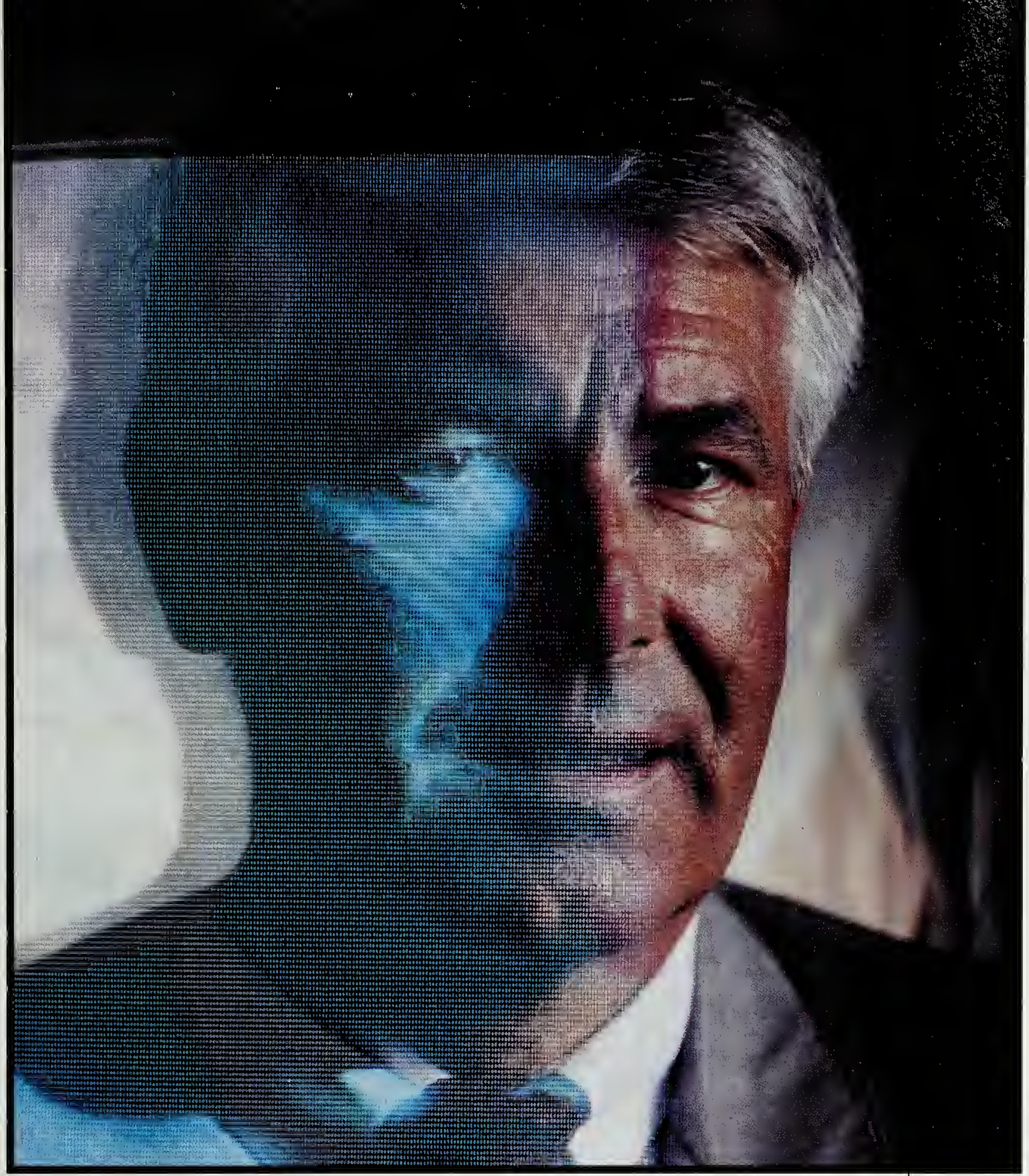
Consider some other traits shared by these best of the best in IS.

■ **Close to the customer.** At IFF and Gannett, IS actually lives at business units. Gannett employs systems managers at each of more than 160 newspaper offices and TV stations nationwide. IFF experimented last year with relocating application developers, business modelers and other technicians to individual user departments.

The move shook people up — for the better, says IS director Wim van Berkel. IS learned what sales, marketing and engineering does and vice versa.

That doesn't mean IFF's 57-member IS staff knows how to bind polymers to create the perfect cheddar flavor for a new cheese-like product. But IS must understand how the salesperson who sells that flavor works and what the clients need to know when, van Berkel says. "We've made it very clear to people that that's their charter."

■ **Customer service, customer service, customer service.** Like a caffeine addict around


photograph by NEIL SELKIRK

IFF'S WIM VAN BERKEL says IS must understand how salespeople at the company work

fine Brazilian coffee, Carl Beihl, vice president of strategic technology planning at IDS, obsesses about catering to the customer. "Previously, we were organized around products — mutual funds, policies, that kind of thing," he says. "Now we're focused around market groups — who's buying what and how we can help them buy more."

IDS plans to roll out early next year new client management software to its nationwide sales force.

But more important are the regular meetings software developers have with field sales, says Alan Bidnall, IDS' vice president of financial planning. Bidnall and other business managers meet with IS folks each quarter to refine technology projects in progress and in planning.

With 11 years in IS before assuming his current role in 1990, Bidnall says the process is simple. "We look at what our competitors are doing and what we want to do, then IS goes off and figures out the technology to make it happen."

Sometimes the two sides disagree on how to reach goals, "but the clash is part of the coming together," Bidnall adds.

At some firms, electronic data interchange is becoming synonymous with customer service, says IFF's van Berkel. IFF is considering setting up terminals at customer sites next year, and Milwaukee-based engine and lock maker Briggs & Stratton may also link to suppliers in that manner.

■ **Outsourcing is not a dirty word anymore.** While it used to be a scary, expensive, all-or-nothing deal, outsourcing has been whittled down to a tool that can be controlled by IS. Such selective outsourcing can be like a surgeon's knife, says Geoffrey Barnes, a consultant at Cap Gemini America, Inc.'s Atlanta office. Applied thoughtfully and precisely, outsourcing is a way to "cut away the painful parts of your job to promote growth," he says.

Illinois Central recently farmed out its core transportation systems to the Union Pacific Technology unit of Union Pacific Railroad. Illinois Central plans to redeploy internal IS to rebuild and "client/server-ize" financial systems, says Norman Schwarz, director of technical network support.

■ **ROI is king.** One issue that unifies the *Premier 100* star performers is a focus on cost justification. Asked on the *Premier 100* survey to rate the importance of return on investment (ROI) in justifying IS investments, nearly every company deemed it "extremely important."

ROI "is the only way we go," IDS' Bidnall says. But the firm allows strategic projects more breathing room as far as showing bottom-line returns, he says. However, quick hit efforts, such as setting up a temporary forecasting system, need to prove their value almost immediately, he says.

Likewise, each and every project at Gannett is looked at first for its ROI, says John Palm, IS director at the Arlington, Va.-based company. Gannett recently installed a graphical decision support application to help advertising marketers better target their efforts. Palm wouldn't specify how much money the media chain has seen in new sales related to the application, but he says the project will continue: "We're putting a lot more money into it next year, let's just say." ☐

Nash is a Computerworld *West Coast senior editor.*

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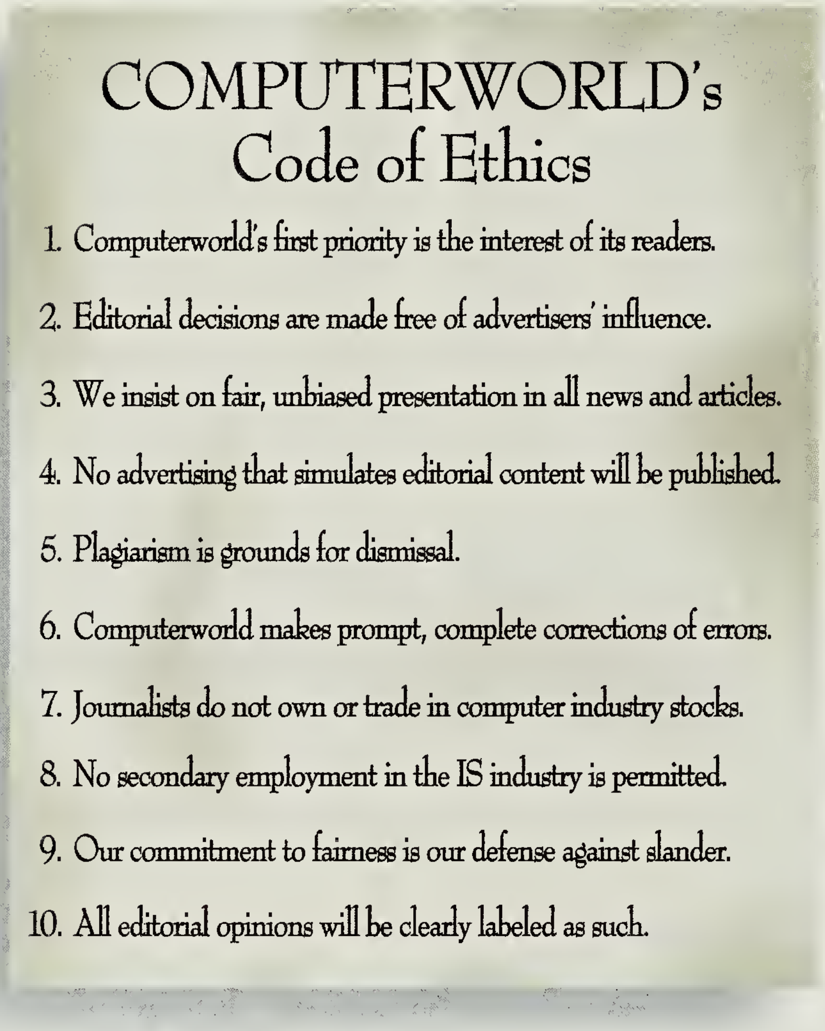

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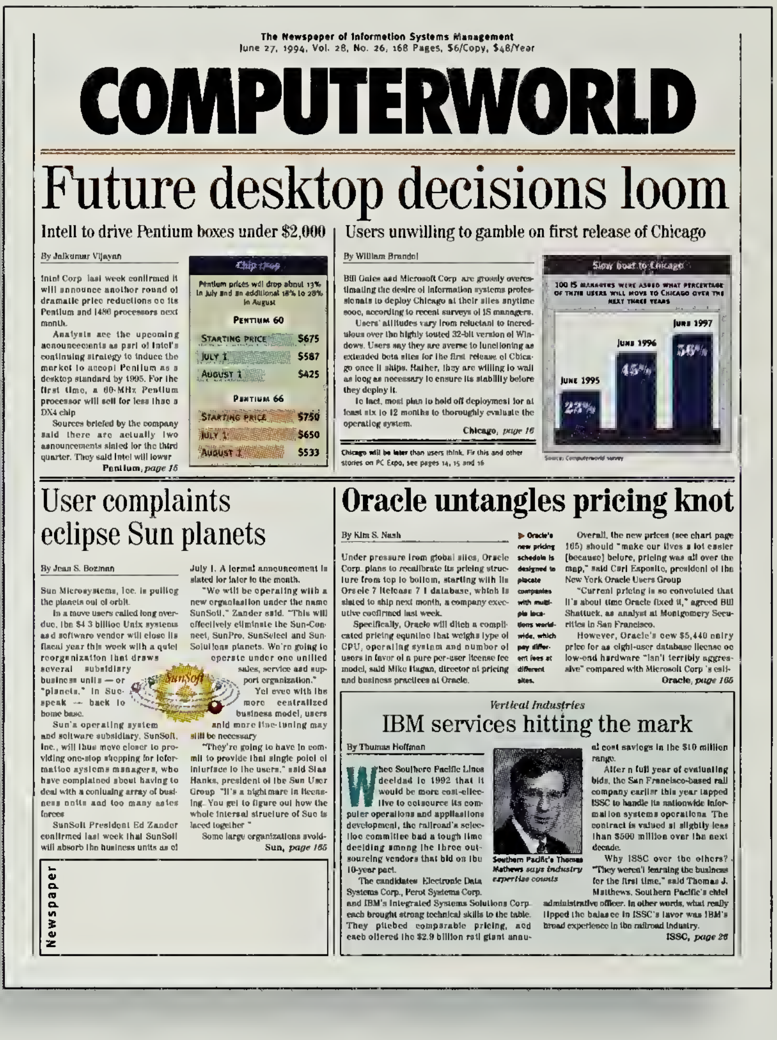

The Newspaper of Information Systems Management
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COMPUTERWORLD

Future desktop decisions loom

Intel to drive Pentium boxes under $2,000

By Jaikumar Vijayan

Intel Corp. last week confirmed it will announce another round of dramatic price reductions on its Pentium and i486 processors next month.

Analysts see the upcoming announcements as part of Intel's continuing strategy to induce the market to accept Pentium as a desktop standard by 1995. For the first time, a 60-MHz Pentium processor will sell for less than a DX4 chip.

Sources briefed by the company said there are actually two announcements slated for the third quarter. They said Intel will lower

Pentium, *page 15*

Chip drop

Pentium prices will drop about 13% in July and an additional 18% to 28% in August

Pentium 60	
Starting price	$675
July 1	$587
August 1	$425

Pentium 66	
Starting price	$750
July 1	$650
August 1	$533

Users unwilling to gamble on first release of Chicago

By William Brandel

Bill Gates and Microsoft Corp. are grossly overestimating the desire of information systems professionals to deploy Chicago at their sites anytime soon, according to recent surveys of IS managers.

Users' attitudes vary from reluctant to incredulous over the highly touted 32-bit version of Windows. Users say they are averse to functioning as extended beta sites for the first release of Chicago once it ships. Rather, they are willing to wait as long as necessary to ensure its stability before they deploy it.

In fact, most plan to hold off deployment for at least six to 12 months to thoroughly evaluate the operating system.

Chicago, *page 16*

Chicago will be later than users think. For this and other stories on PC Expo, see pages 14, 15 and 16

Slow boat to Chicago

100 IS managers were asked what percentage of their users will move to Chicago over the next three years

Source: Computerworld survey

User complaints eclipse Sun planets

By Jean S. Bozman

Sun Microsystems, Inc. is pulling the planets out of orbit.

In a move users called long overdue, the $4.3 billion Unix systems and software vendor will close its fiscal year this week with a quiet reorganization that draws several subsidiary business units — or "planets," in Sun-speak — back to home base.

Sun's operating system and software subsidiary, SunSoft, Inc., will thus move closer to providing one-stop shopping for information systems managers, who have complained about having to deal with a confusing array of business units and too many sales forces.

SunSoft President Ed Zander confirmed last week that SunSoft will absorb the business units as of July 1. A formal announcement is slated for later in the month.

"We will be operating with a new organization under the name SunSoft," Zander said. "This will effectively eliminate the SunConnect, SunPro, SunSelect and SunSolutions planets. We're going to operate under one unified sales, service and support organization."

Yet even with the more centralized business model, users said more fine-tuning may still be necessary.

"They're going to have to commit to provide that single point of interface to the users," said Stan Hanks, president of the Sun User Group. "It's a nightmare in licensing. You get to figure out how the whole internal structure of Sun is laced together."

Some large organizations avoid-

Sun, *page 165*

Oracle untangles pricing knot

By Kim S. Nash

Under pressure from global sites, Oracle Corp. plans to recalibrate its pricing structure from top to bottom, starting with its Oracle 7 Release 7.1 database, which is slated to ship next month, a company executive confirmed last week.

Specifically, Oracle will ditch a complicated pricing equation that weighs type of CPU, operating system and number of users in favor of a pure per-user license fee model, said Mike Hagan, director of pricing and business practices at Oracle.

▶ Oracle's new pricing schedule is designed to placate companies with multiple locations worldwide, which pay different fees at different sites.

Overall, the new prices (see chart page 165) should "make our lives a lot easier [because] before, pricing was all over the map," said Carl Esposito, president of the New York Oracle Users Group.

"Current pricing is so convoluted that it's about time Oracle fixed it," agreed Bill Shattuck, an analyst at Montgomery Securities in San Francisco.

However, Oracle's new $5,440 entry price for an eight-user database license on low-end hardware "isn't terribly aggressive" compared with Microsoft Corp.'s call-

Oracle, *page 165*

Vertical Industries

IBM services hitting the mark

By Thomas Hoffman

When Southern Pacific Lines decided in 1992 that it would be more cost-effective to outsource its computer operations and applications development, the railroad's selection committee had a tough time deciding among the three outsourcing vendors that bid on the 10-year pact.

The candidates: Electronic Data Systems Corp., Perot Systems Corp. and IBM's Integrated Systems Solutions Corp. each brought strong technical skills to the table. They pitched comparable pricing, and each offered the $2.9 billion rail giant annual cost savings in the $10 million range.

After a full year of evaluating bids, the San Francisco-based rail company earlier this year tapped ISSC to handle its nationwide information systems operations. The contract is valued at slightly less than $500 million over the next decade.

Why ISSC over the others? "They weren't learning the business for the first time," said Thomas J. Matthews, Southern Pacific's chief administrative officer. In other words, what really tipped the balance in ISSC's favor was IBM's broad experience in the railroad industry.

ISSC, *page 26*

Southern Pacific's Thomas Mathews *says industry expertise counts*

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How we evaluated productivity

PAUL STRASSMANN

Twenty years of experience as a CIO trying to explain budget increases to corporate executives has taught me that our traditional means of evaluating productivity don't work. In this issue, you'll find criteria that do.

This year's listing of *Computerworld Premier 100* companies was compiled based on my own Information Productivity Index.

Information Productivity measures and rewards the effectiveness of corporate management. It does not reward the more common metrics of information technology spending, such as computer budget, the value of installed equipment or other measures of brute force. That is because there is no demonstrable correlation between the financial performance of a firm and the amount it spends on information technologies. What matters is not how much you spend but how well you spend it in supporting business missions and contributing to productivity.

The old justification methods don't work because they rely on ratios that measure the efficiency of capital. These indicators have such names as return on assets, return on investment and return on equity. But in modern enterprises, capital doesn't mean as much as it used to. The performance of high technology and service businesses are influenced more by the quality of their management than by their assets.

Productivity is the ratio of output to input. Unfortunately, there's no place for management's output on an income statement. But there is a way to calculate it. If you subtract from after-tax profits the value of the shareholder's equity capital, what's left is the value of management.

Technology isn't productive in itself. But well-managed, superbly trained and motivated people — with or without computers — can show measurable gains in output.

Input of management is the cost of the coordination of an enterprise, frequently defined as either overhead or indirect costs.

These definitions of output and input reject conventional productivity measures. For example, revenue is not a measure of output because it includes value added by suppliers. Profits are not an acceptable measure of performance because they don't include compensation to shareholders. Costs — especially costs per employee — are misleading indicators of input because they include the value of purchases. The value of assets is irrelevant as a measure of input because leasing and outsourcing distort that statistic.

Recent improvements in financial reporting and the availability of detailed financial information have made it possible to calculate a reasonable return on management. For output, I use Stern, Stewart & Co.'s popular Economic Value-Added (EVA). If EVA is not available, output can be calculated by subtracting from operating profit after taxes the value of shareholder equity, multiplied by the cost of capital.

The costs of sales, general and administration (SG&A) are a reasonable approximation of management costs. Divide EVA by SG&A to get the Information Productivity Index.

The *Computerworld Premier 100* rankings have been calculated using published 1993 financial results for the Fortune 1,000. Because some firms show wide swings in year-to-year profits, our rankings also considered three-year averages. Firms that reported favorable operating profits after taxes but also large accounting write-offs, which made their shareholder equity negative, were eliminated from consideration.

Because Information Productivity relates to the numbers that are watched and understood by your board of directors, your top executives and your shareholders, this year's *Computerworld Premier 100* rankings offer a sound basis from which to start discussions on how to do better next year. ☐

Strassmann is a consultant and former CIO of Kraft Corp., General Foods Corp., Xerox Corp. and the U.S. Department of Defense.

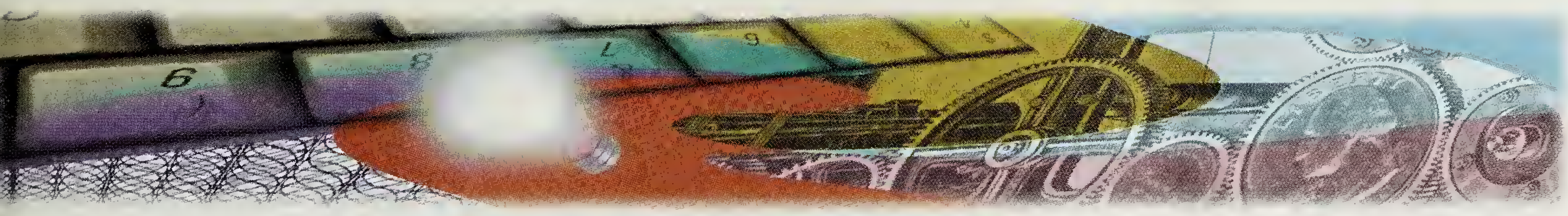
There is no demonstrable correlation between the financial performance of a firm and the amount it spends on information technologies.

Premier 100

PREMIER 100 RANK	COMPANY	INDUSTRY	INFORMATION PRODUCTIVITY INDEX	CIO'S YEARS IN POSITION	CIO REPORTS TO
1	**Unifi, Inc.**	Textiles	1.81	12	Executive Vice President, Finance
2	**Illinois Central Corp.**	Transportation	1.35	4	President & CEO
3	**Ambac, Inc.***	Financial Services	1.25	1	CEO
4	**ARA Group, Inc.**	Diversified Services	1.08	12	Senior Vice President, Finance & HR
5	**UST, Inc.***	Tobacco	1.05	NA	NA
6	**Fluor Corp.**	Diversified Services	.95	3	Group President
7	**MAPCO, Inc.**	Petroleum Refining	.82	1	Senior Vice President & CFO
8	**MBIA, Inc.**	Financial Services	.78	1	Controller & Senior Vice President
9	**U.S. Healthcare, Inc.**	Diversified Services	.74	5	Chief Marketing Officer & COO
10	**Amgen, Inc.**	Pharmaceuticals	.71	4.5	Senior Vice President, Operations
11	**Newmont Mining Corp.**	Gold Mining	.6	2.5	Senior Vice President, Operations
12	**Cooper Tire & Rubber Co.**	Plastic Products	.58	2	President & COO
13	**Great Lakes Chemical Corp.**	Chemicals	.52	8	Executive Vice President & CFO
14	**Abbott Laboratories***	Pharmaceuticals	.5	NA	NA
15	**International Flavors & Fragrances, Inc.**	Soaps & Cosmetics	.49	18	President
16	**The Bear Stearns Cos.**	Financial Services	.43	7	COO & CFO
17	**Walt Disney Co.**	Diversified Services	.41	5	CFO
18	**CSF Holdings, Inc.***	Savings Banks	.41	8	Vice President, Finance
19	**Ace Hardware Corp.**	Diversified Services	.4	5	Executive Vice President & COO
20	**Waste Management, Inc.**	Diversified Services	.38	0.25	CFO
21	**Collective Bancorp, Inc.**	Savings Banks	.37	3	Vice Chairman
22	**Schering-Plough Corp.***	Pharmaceuticals	.36	6	Executive Vice President
23	**Fruit of the Loom, Inc.***	Apparel	.36	NA	NA
24	**Morgan Stanley Group, Inc.***	Financial Services	.35	1	Senior Vice President
25	**American Home Products Corp.**	Pharmaceuticals	.34	3	Executive Vice President

*Data not from the top executive at the company

Note: Information Productivity Index=[(Profit before taxes-provision for income taxes)-cost of capital] / [Selling, general & administrative expense] Higher numbers indicate superior productivity



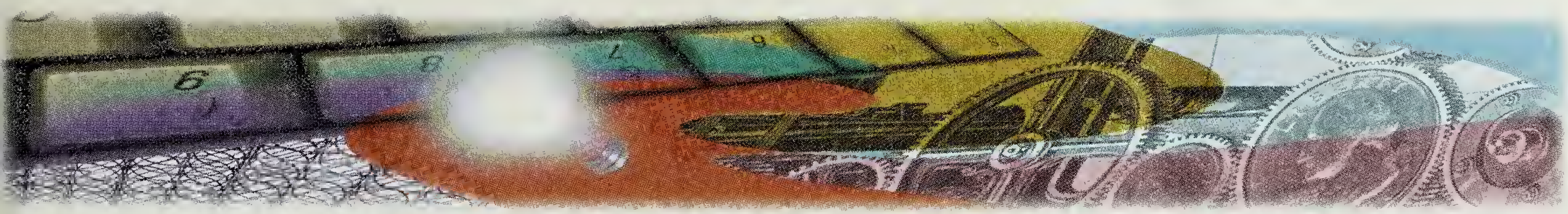
TOTAL NUMBER OF EMPLOYEES	TOTAL NUMBER OF IS STAFF (RANGE)	TOTAL IS BUDGET (RANGE)	PERCENT CHANGE IN BUDGET '93-'94	PERCENT IS BUDGET SPENT OUTSIDE IS DEPARTMENT	PERCENT SOFTWARE SPENT ON NEW DEVELOPMENT	PERCENT SOFTWARE DEVELOPMENT FOR CLIENT/SERVER	PERCENT SOFTWARE DEVELOPMENT FOR MAINTENANCE	TOTAL DESKTOP SERVERS (RANGE)	PERCENT OF DESKTOP DEVICES NETWORKED
5,177	<100	$5M-$9.9M	22%	15%	65%	28%	NA	250-499	19%
3,219	<100	$5M-$9.9M	-0.6%	5%	16%	11%	84%	500-999	21%
300	<100	$25M-$49.9M	NA	NA	NA	NA	NA	1,000-2,499	NA
135,400	250-499	$25M-$49.9M	2.5%	15%	60%	40%	40%	>10,000	15%
3,724	100-249	$25M-$49.9M	NA	NA	NA	NA	40%	1,000-2,499	NA
43,000	500-999	$100M-$249.9M	0%	5%	30%	10%	70%	1,000-2,499	95%
6,313	<100	$10M-$24.9M	NA	20%	40%	10%	60%	1,000-2,499	70%
350	<100	$1M-$4.9M	17.5%	NA	90%	33%	10%	250-499	100%
3,800	250-499	$50M-$99.9M	18%	65%	65%	80%	35%	2,500-4,999	95%
3,807	100-249	$25M-$49.9M	NA	12%	60%	15%	40%	2,500-4,999	95%
2,393	<100	$1M-$4.9M	13%	2%	30%	25%	70%	500-999	90%
7,500	100-249	$10M-$24.9M	7%	10%	60%	25%	40%	1,000-2,499	75%
7,000	100-249	$10M-$24.9M	0%	10%	35%	10%	65%	1,000-2,499	75%
49,659	1,000-2,499	$250M-$499.9M	10%	NA	NA	NA	NA	5,000-9,999	NA
4,300	100-249	$25M-$49.9M	-3%	17%	90%	85%	10%	1,000-2,499	100%
7,321	500-999	$100M-$249.9M	23%	6%	57%	43%	43%	>10,000	97%
62,000	1,000-2,499	$250M-$499.9M	1%	5%	65%	35%	35%	>10,000	95%
620	<100	$25M-$49.9M	0%	50%	75%	70%	25%	1,000-2,499	30%
3,718	100-249	$10M-$24.9M	9%	0%	60%	10%	40%	1,000-2,499	80%
35,979	250-499	$50M-$99.9M	-26%	50%	20%	1%	80%	>10,000	78%
1,050	<100	$1M-$4.9M	0%	0%	10%	100%	90%	1,000-2,499	90%
21,600	500-999	$50M-$99.9M	5%	10%	55%	75%	45%	2,500-4,999	75%
35,000	<100	$50M-$99.9M	NA	NA	NA	NA	NA	1,000-2,499	NA
9,025	<100	$1M-$4.9M	-20%	10%	75%	50%	25%	1,000-2,499	100%
50,000	1,000-2,499	$100M-$249.9M	10%	10%	10%	80%	80%	2,500-4,999	65%

illustrations by M.A.D.

Premier 100

PREMIER 100 RANK	COMPANY	INDUSTRY	INFORMATION PRODUCTIVITY INDEX	CIO'S YEARS IN POSITION	CIO REPORTS TO
26	**Cone Mills Corp.***	Textiles	.33	3	Vice President, Finance
27	**Merck & Co.**	Pharmaceuticals	.33	2	Senior Vice President
28	**Briggs & Stratton Corp.**	Farm Equipment	.33	19	Executive Vice President, Administration
29	**Merrill Lynch & Co.**	Financial Services	.32	3.5	Chairman & CEO
30	**Boston BanCorp***	Savings Banks	.32	1	CEO
31	**Sunbeam-Oster Co.***	Electronics	.3	0	CFO
32	**Salomon Brothers, Inc.**	Financial Services	.29	3	Managing Director of Exec. Committee
33	**Coca Cola Co.***	Beverages	.29	3	Controller
34	**Bristol-Myers Squibb Co.***	Pharmaceuticals	.29	3	CFO
35	**Praxair, Inc.**	Chemicals	.29	0.5	CFO
36	**Charles Schwab Corp.**	Financial Services	.29	1	President
37	**Gannett Co.***	Publishing & Printing	.28	12	CFO
38	**GEICO Corp.**	Financial Services	.26	1	CEO
39	**Levi Strauss Associates, Inc.**	Apparel	.25	9	COO
40	**Dibrell Brothers, Inc.**	Tobacco	.24	25	Senior Vice President & CFO
41	**Gerber Products Co.**	Food	.24	10	CFO
42	**Rubbermaid, Inc.***	Plastic Products	.24	NA	NA
43	**Medtronic, Inc.**	Photographic Equipment	.23	15	Senior Vice President & CFO
44	**American President Cos.**	Transportation	.23	7	Chairman, CEO & President
45	**H&R Block, Inc.**	Diversified Services	.22	1	President & CEO
46	**Raytheon Co.***	Electronics	.22	3	Vice President, Engineering
47	**Kellogg Co.***	Food	.21	12	Vice President
48	**Worthington Industries, Inc.**	Metals	.21	1	Vice President, Engineering
49	**United Healthcare Corp.**	Diversified Services	.21	5	CEO
50	**W. M. Wrigley Jr. Co.***	Food	.2	2	Vice President, Finance

***Data not from the top executive at the company**



TOTAL NUMBER OF EMPLOYEES	TOTAL NUMBER OF IS STAFF (RANGE)	TOTAL IS BUDGET (RANGE)	PERCENT CHANGE IN BUDGET '93-'94	PERCENT IS BUDGET SPENT OUTSIDE IS DEPARTMENT	PERCENT SOFTWARE SPENT ON NEW DEVELOPMENT	PERCENT SOFTWARE DEVELOPMENT FOR CLIENT/SERVER	PERCENT SOFTWARE DEVELOPMENT FOR MAINTENANCE	TOTAL DESKTOP SERVERS (RANGE)	PERCENT OF DESKTOP DEVICES NETWORKED
7,800	250-499	$25M-$49.9M	0%	1%	40%	5%	60%	2,500-4,999	90%
18,172	500-999	$100M-$249.9M	9%	10%	65%	80%	35%	1,000-2,499	80%
7,950	<100	$5M-$9.9M	4%	20%	25%	20%	75%	500-999	40%
42,650	2,500-4,999	>$500M	7%	0%	60%	70%	40%	2,500-4,999	90%
210	<100	$1M-$4.9M	NA	20%	0%	99%	100%	100-249	100%
10,500	500-999	$1M-$4.9M	80%	0%	40%	95%	60%	1,000-2,499	100%
8,629	1,000-2,499	$100M-$249.9M	-2%	50%	35%	100%	65%	5,000-9,999	99%
34,000	100-249	$100M-$249.9M	0%	25%	60%	50%	40%	5,000-9,999	50%
49,500	1,000-2,499	$100M-$249.9M	-10%	5%	40%	30%	60%	>10,000	70%
16,766	100-249	$10M-$24.9M	-20%	25%	50%	75%	50%	2,500-4,999	95%
6,100	500-999	$100M-$249.9M	12%	25%	80%	85%	20%	5,000-9,999	90%
36,000	500-999	$50M-$99.9M	5%	0%	40%	20%	60%	>10,000	30%
8,350	500-999	$25M-$49.9M	4%	12.5%	58%	15%	42%	5,000-9,999	98%
36,400	500-999	$50M-$99.9M	78%	NA	90%	50%	10%	5,000-9,999	100%
4,600	<100	$1M-$4.9M	-10%	12%	60%	80%	40%	100-249	25%
9,280	100-249	$10M-$24.9M	11%	30%	80%	30%	NA	1,000-2,499	50%
11,978	100-249	$50M-$99.9M	3%	NA	NA	NA	NA	2,500-4,999	NA
9,856	100-249	$25M-$49.9M	8%	NA	65%	25%	35%	2,500-4,999	90%
4,655	250-499	$100M-$249.9M	13%	37%	60%	90%	40%	2,500-4,999	80%
81,000	250-499	$10M-$24.9M	15%	75%	60%	5%	40%	>10,000	2%
63,800	>10,000	$25M-$49.9M	7%	30%	30%	70%	70%	>10,000	85%
16,151	500-999	$250M-$499.9M	7%	15%	30%	15%	70%	>10,000	35%
7,000	<100	$5M-$9.9M	50%	60%	20%	0%	80%	1,000-2,499	80%
7,772	500-999	$100M-$249.9M	22%	NA	40%	30%	60%	5,000-9,999	98%
6,700	100-249	$10M-$24.9M	10%	20%	50%	10%	50%	500-999	50%

Premier 100

PREMIER 100 RANK	COMPANY	INDUSTRY	INFORMATION PRODUCTIVITY INDEX	CIO'S YEARS IN POSITION	CIO REPORTS TO
51	**Johnson & Johnson***	Pharmaceuticals	.19	4	Chairman & CEO
52	**Newell Co.***	Metal Products	.19	1	Treasurer
53	**NALCO Chemical Co.**	Chemicals	.19	3.5	Senior Vice President, Mfg. & Logistics
54	**Lancaster Colony Corp.***	Food	.19	4	Vice President, Finance
55	**E-Systems, Inc.***	Electronics	.19	6	Vice President, Finance
56	**Nike, Inc.***	Diversified Services	.19	0	Vice President, Operations
57	**Advanta Corp.**	Financial Services	.18	0.5	Senior Vice President, Corporate Admin.
58	**Southwestern Bell Corp.**	Utilities	.18	2.5	President, Network Services
59	**Travelers Corp.**	Financial Services	.18	4	Chief Administration Officer
60	**Charter One Financial, Inc.***	Savings Banks	.18	4	Senior Vice President, Operations
61	**Gap, Inc.**	Retailing	.17	4.5	CFO
62	**Valspar Corp.***	Chemicals	.17	1	President
63	**Bankers Trust New York Corp.**	Commercial Banks	.16	10	President
64	**McDonald's Corp.**	Retailing	.16	11	Executive Vice President
65	**Reebok International Ltd.**	Diversified Services	.16	3	Executive Vice President, Operations
66	**First Commerce Corp.***	Commercial Banks	.16	3	Executive Vice President
67	**Sigma Aldrich Co.***	Chemicals	.16	15	President
68	**Thiokol Corp.**	Aerospace	.16	3.5	Senior Vice President, Finance & CFO
69	**JP Morgan & Co.***	Commercial Banks	.15	3	Managing Director
70	**Rockwell International Corp.**	Electronics	.15	11	Senior Vice President
71	**Emerson Electric Co.**	Electronics	.15	2	Executive Vice President
72	**CPC International, Inc.***	Food	.15	12	Vice President, Administration
73	**IDS Financial Corp.***	Life Insurance	.15	26	CEO
74	**H. J. Heinz Co.***	Food	.15	2	Vice President, Finance
75	**3M Co.**	Photographic Equipment	.15	2	Vice President, Logistics

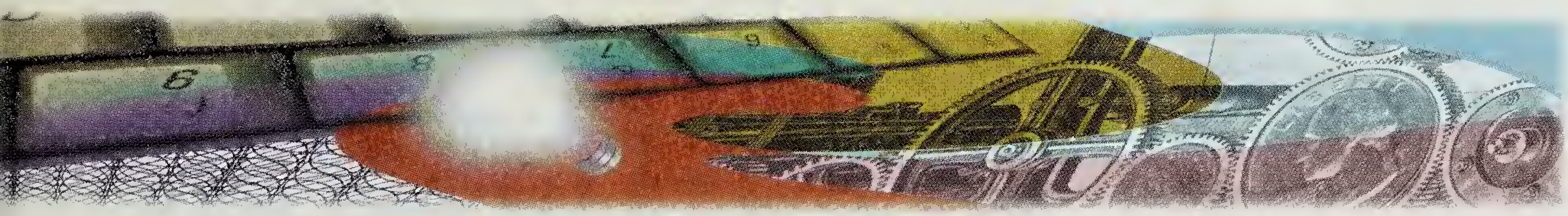
***Data not from the top executive at the company**

TOTAL NUMBER OF EMPLOYEES	TOTAL NUMBER OF IS STAFF (RANGE)	TOTAL IS BUDGET (RANGE)	PERCENT CHANGE IN BUDGET '93-'94	PERCENT IS BUDGET SPENT OUTSIDE IS DEPARTMENT	PERCENT SOFTWARE SPENT ON NEW DEVELOPMENT	PERCENT SOFTWARE DEVELOPMENT FOR CLIENT/SERVER	PERCENT SOFTWARE DEVELOPMENT FOR MAINTENANCE	TOTAL DESKTOP SERVERS (RANGE)	PERCENT OF DESKTOP DEVICES NETWORKED
81,600	1,000-2,499	$100M-$249.9M	-10%	NA	40%	75%	60%	>10,000	100%
15,000	<100	$10M-$24.9M	3%	10%	30%	5%	70%	1,000-2,499	40%
6,998	100-249	$10M-$24.9M	2%	23%	75%	25%	25%	2,500-4,999	95%
5,000	<100	$1M-$4.9M	5%	10%	50%	5%	50%	100-249	10%
16,703	<100	$50M-$99.9M	5%	50%	100%	5%	0%	5,000-9,999	75%
5,000	250-499	$10M-$24.9M	0%	20%	80%	40%	20%	5,000-9,999	100%
1,600	100-249	$5M-$9.9M	29%	63%	50%	10%	50%	1,000-2,499	100%
61,230	1,000-2,499	$250M-$499.9M	10%	1.5%	20%	70%	80%	>10,000	90%
60,000	2,500-4,999	>$500M	50%	40%	NA	NA	NA	>10,000	85%
1,600	<100	$10M-$24.9M	NA	NA	NA	NA	NA	1,000-2,499	NA
40,000	250-499	$50M-$99.9M	20%	0%	65%	8%	15%	2,500-4,999	92%
2,513	<100	$25M-$49.9M	-15%	5%	5%	50%	95%	500-999	50%
13,000	1,000-2,499	>$500M	18%	0%	65%	80%	20%	>10,000	85%
167,000	500-999	$50M-$99.9M	-1%	20%	75%	20%	25%	1,000-2,499	100%
4,300	250-499	$50M-$99.9M	18%	2.5%	65%	70%	35%	1,000-2,499	100%
3,500	<100	$25M-$49.9M	0%	NA	50%	25%	50%	1,000-2,499	90%
4,291	<100	$10M-$24.9M	22%	NA	NA	25%	NA	1,000-2,499	5%
8,982	250-499	$25M-$49.9M	-6%	5%	86%	60%	14%	>10,000	98%
15,000	250-499	$100M-$249.9M	20%	20%	70%	30%	30%	1,000-2,499	100%
75,000	1,000-2,499	$250M-$499.9M	-2%	25%	50%	15%	50%	>10,000	85%
71,600	500-999	$100M-$249.9M	0%	NA	NA	NA	NA	>10,000	NA
38,924	250-499	$100M-$249.9M	4%	NA	40%	40%	60%	5,000-9,999	50%
8,371	500-999	$100M-$249.9M	15%	20%	60%	30%	40%	>10,000	40%
37,700	500-999	$100M-$249.9M	15%	20%	60%	30%	40%	>10,000	40%
85,650	2,500-4,999	$250M-$499.9M	2%	50%	82%	75%	18%	5,000-9,999	95%

Premier 100

PREMIER 100 RANK	COMPANY	INDUSTRY	INFORMATION PRODUCTIVITY INDEX	CIO'S YEARS IN POSITION	CIO REPORTS TO
76	**Fifth Third Bancorp***	Commercial Banks	.15	0.3	CEO
77	**Ameritech Corp.**	Utilities	.15	1.3	President, Network Services
78	**Rhone Poulenc Rorer, Inc.***	Pharmaceuticals	.14	5	CFO
79	**General Mills, Inc.***	Food	.14	5	Corporate Comtroller
80	**PaineWebber Group, Inc.**	Financial Services	.14	5	Chief Administration Officer
81	**Turner Corp.**	Diversified Services	.14	1	Senior Vice President, Board of Dir.
82	**Hon Industries, Inc.***	Furniture	.14	15	President
83	**MBNA Corp.**	Commercial Banks	.14	3	Chairman of the Board & CEO
84	**General RE Corp.***	Financial Services	.14	17	President
85	**First Virginia Banks, Inc.**	Commercial Banks	.13	8	Chairman & CEO
86	**Allergan, Inc.***	Pharmaceuticals	.13	12	CIO
87	**Leggett & Platt, Inc.**	Furniture	.13	20	Senior Vice President, Finance & Admin.
88	**May Department Stores Co.***	Retailing	.13	12	President
89	**Hershey Foods Corp.**	Food	.12	15	Vice President, Finance & Administration
90	**Hillenbrand Industries, Inc.**	Metal Products	.12	5	Vice President & Controller
91	**Stewart & Stevenson Services***	Farm Equipment	.12	21	Corporate Comtroller
92	**Tribune Co.**	Publishing & Printing	.12	5	Chairman & CEO
93	**Reader's Digest Association, Inc.**	Publishing & Printing	.12	3	COO/CEO
94	**Wal-Mart Stores, Inc.**	Retailing	.12	1	COO
95	**Sonoco Products Co.**	Forest Products	.11	4	Executive Vice President
96	**Gillette Co.**	Metal Products	.11	1.5	CFO
97	**Werner Enterprises, Inc.**	Transportation	.11	1	Vice President
98	**Avon Products, Inc.***	Soaps & Cosmetics	.11	7	COO
99	**Dover Corp.***	Farm Equipment	.11	14	Vice President, Finance
100	**Upjohn Co.**	Pharmaceuticals	.11	8	Corp. Executive Vice President, Admin.

***Data not from the top executive at the company**



TOTAL NUMBER OF EMPLOYEES	TOTAL NUMBER OF IS STAFF (RANGE)	TOTAL IS BUDGET (RANGE)	PERCENT CHANGE IN BUDGET '93-'94	PERCENT IS BUDGET SPENT OUTSIDE IS DEPARTMENT	PERCENT SOFTWARE SPENT ON NEW DEVELOPMENT	PERCENT SOFTWARE DEVELOPMENT FOR CLIENT/SERVER	PERCENT SOFTWARE DEVELOPMENT FOR MAINTENANCE	TOTAL DESKTOP SERVERS (RANGE)	PERCENT OF DESKTOP DEVICES NETWORKED
4,938	250-499	$5M-$9.9M	15%	NA	NA	NA	NA	2,500-4,999	NA
66,956	2,500-4,999	>$500M	0%	2%	30%	18%	70%	>10,000	90%
22,500	250-499	$10M-$24.9M	0%	5%	35%	30%	65%	250-499	95%
121,290	250-499	$.5M-$999,999	10%	NA	NA	NA	NA	2,500-4,999	NA
13,000	500-999	$100M-$249.9M	12%	15%	75%	80%	25%	>10,000	92%
2,445	<100	$1M-$4.9M	-17%	50%	40%	NA	60%	1,000-2,499	80%
5,691	100-249	$10M-$24.9M	10%	0%	20%	10%	80%	1,000-2,499	100%
9,868	1,000-2,499	$50M-$99.9M	87%	19%	61%	15%	39%	5,000-9,999	85%
2,400	250-499	$25M-$49.9M	0%	0%	85%	100%	15%	1,000-2,499	20%
5,400	100-249	$25M-$49.9M	8%	0%	35%	5%	65%	<100	100%
4,749	100-249	$10M-$24.9M	NA	40%	70%	60%	40%	1,000-2,499	80%
4,000	<100	$5M-$9.9M	8%	10%	60%	10%	40%	500-999	2%
140,000	500-999	$50M-$99.9M	0%	10%	40%	5%	60%	>10,000	25%
15,300	100-249	$10M-$24.9M	15%	36%	60%	5%	40%	1,000-2,499	90%
10,200	100-249	>$500M	5%	5%	NA	20%	100%	100-249	100%
2,850	<100	$1M-$4.9M	20%	0%	NA	1%	NA	NA	NA
9,862	<100	$10M-$24.9M	1%	5%	25%	20%	25%	5,000-9,999	25%
7,200	250-499	$50M-$99.9M	0%	1%	64%	34%	36%	5,000-9,999	98%
540,000	1,000-2,499	$250M-$499.9M	15%	1%	85%	95%	15%	>10,000	100%
18,000	<100	$10M-$24.9M	2%	18%	70%	35%	30%	1,000-2,499	70%
33,400	250-499	$100M-$249.9M	13%	20%	70%	80%	30%	>10,000	35%
3,845	<100	$5M-$9.9M	50%	25%	75%	10%	25%	100-249	75%
29,800	500-999	$50M-$99.9M	8%	75%	75%	10%	25%	5,000-9,999	25%
20,445	<10	$5M-$9.9M	5%	20%	50%	85%	50%	250-499	80%
18,600	500-999	$100M-$249.9M	-5%	50%	66%	40%	34%	5,000-9,999	90%

A list of **PREMIER 100** companies, top IS executives and page references. Page numbers refer to the first page of the article(s) in which the company is mentioned.

The 1994 Premier 100

3M Co., David P. Drew, V.P., IT, **50**
Abbott Laboratories, Kenneth Farmer, V.P., Corporate MIS, **46**
Ace Hardware Corp., Don Schuman, V.P., IS, **10,46**
Advanta Corp., Dan Muecke, V.P., Corporate Tech., **50**
Allergan, Inc., Mike Lach, V.P., Info. Svcs., **52**
Ambac, Inc., Randy Schmidt, Sr. V.P., **17,46**
American Home Products Corp., Edward A. Schefer, V.P., MIS, **46**
American President Cos., James S. Marston, Sr. V.P. and CIO, **34,48**
Ameritech Corp., James Goetz, V.P., IT, **52**
Amgen, Inc., Bruce Whetstone, Director, Corporate IT, **8,17,20,36,46**
ARA Group, Inc., John Kallelis, V.P., IT, **17,46**
Avon Products, Inc., 52
Bankers Trust New York Corp., Carmine Vona, Mg. Director, **8,50**
The Bear Stearns Cos., W. Ben Kuenemann, Sr. Mg. Director, Info. Svcs., **8,10,26,38,46**
Boston BanCorp, Kenneth Bordewieck, Director, MIS, **48**
Briggs & Stratton Corp., Larry Salsbury, Director, IS, **40,48**
Bristol-Myers Squibb Co., Alex J. Gibbons, V.P., **48**
Charles Schwab Corp., Dawn LePore, CIO and Exec. V.P., **48**
Charter One Financial, Inc., Marc Reider, Projects Assistant, **50**
Coca Cola Co., Hugh Switzer, V.P. and Director, Info. Svcs., **40,48**
Collective Bancorp, Inc., Eric Gaupp, V.P., Systems, **46**
Cone Mills Corp., Paul Vetter, Director, Info. Svcs., **48**
Cooper Tire & Rubber Co., John E. Mitchell, Director, IS, **10,46**
CPC International, Inc., Angelo Abdela, V.P. and Treasurer, **50**
CSF Holdings, Inc., Jack Butler, Sr. V.P., MIS, **46**
Dibrell Brothers, Inc., Lewis R. Handy, V.P. and Director, MIS, **48**
Dover Corp., 52
E-Systems, Inc., Gary Sprehe, V.P., Federal IS, **50**
Emerson Electric Co., S. Lamar Rieves, V.P., IS, **50**
Fifth Third Bancorp, James Hudepohl, Sr. V.P., MIS, **52**
First Commerce Corp., James Granier, Sr. V.P., IS, **50**
First Virginia Banks, Inc., Shirley C. Beavers Jr., President, **52**
Fluor Corp., Bill Mazilly, V.P., Info. Mgmt., **17,46**
Fruit of the Loom, Inc., Joanne Suczynski, Sr. Mgr., MIS, **46**
Gannett Co., John Palm, V.P., Systems, **40,48**
Gap, Inc., Dennis M. Connors, CIO, **50**
GEICO Corp., Simone J. Pace, CIO and Sr. V.P., **48**
General Mills, Inc., Phil Semmer, CIO, **52**
General RE Corp., Stephen Raye, CIO, **52**
Gerber Products Co., John Kraley, Director, Corporate MIS, **48**
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Great Lakes Chemical Corp., Glenn Scuteri, Director, Info. Svcs., **46**
H&R Block, Inc., Judy Keisling, V.P., Info. Svcs., **48**
H. J. Heinz Co., Jerry Havemann, General Mgr., IS, **50**
Hershey Foods Corp., Bruce Dieffenbach, Director, Info. Svcs., **20,52**
Hillenbrand Industries, Inc., Colin Goodnight, Mgr., Corporate MIS, **52**
Hon Industries, Inc., Jim Goughenour, V.P., Process Improvement and Technology, **52**
IDS Financial Corp., Jack Thomas, Sr. V.P., Info. & Tech., **40,50**
Illinois Central Corp., Dale W. Phillips, V.P. and CFO, **17,40,46**
International Flavors & Fragrances, Inc., Wim Van Berkel, V.P., IT, **40,46**
Johnson & Johnson, Ronald Morris, V.P., IT, **50**
JP Morgan & Co., James Brennan, V.P., Software Development, **50**
Kellogg Co., Jay W. Shreiner, V.P., Info. Svcs., **48**
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Levi Strauss Associates, Inc., Bill Eaton, CIO and Sr. V.P., **48**
MAPCO, Inc., J. Chris Scalet, V.P., IS, **17,26,46**
May Department Stores Co., Wayne Berger, Regional V.P., **52**
MBIA, Inc., Jeff Kostiw, V.P. and Mgr., IT, **17,46**
MBNA Corp., Ronald Davies, Vice Chairman and CTO, **52**
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Merck & Co., Charles Popper, V.P., Corporate Computer Resources, **48**
Merrill Lynch & Co., Edward L. Goldberg, Exec. V.P., **33,48**
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Praxair, Inc., Tom Mantz, CIO, **48**
Raytheon Co., Bob Turcotte, **48**
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Sonoco Products Co., Bernie Campbell, V.P., IS, **20,26,52**
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Turner Corp., David Furth, Manager, IS, **52**
U.S. Healthcare, Inc., Richard Castor, CIO and V.P., **17,46**
Unifi, Inc., Jerry Moore, V.P., MIS, **10,13,26,46**
United Healthcare Corp., James P. Bradley, CIO and Sr. V.P., **34,48**
Upjohn Co., Jack Longman, V.P., Mi and OS, **52**
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W. M. Wrigley Jr. Co., Dennis Mally, Director, Info. Svcs., **48**
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Walt Disney Co., Sharon Garrett, CIO, **46**
Waste Management, Inc., Bert Young, V.P., IS, **8,46**
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Worthington Industries, Inc., Bill Miller, Mgr., Corporate IS, **48**

Lessons of the productivity **paradox**

STEPHEN ROACH

Emotions run high at the mere mention of the fabled productivity paradox. Just the hint that computers haven't delivered their long-promised payback has sent shock waves up and down high-tech America.

And with good reason. Such a profound challenge goes right to the heart of the supposed miracles of information technology.

It must be a measurement problem, the critics say. Surely technology has always been of great value but undoubtedly in ways that are escaping the U.S. government's economic accounting system. Fix the metrics, and presto! The paradox would vanish.

That, in fact, was a key conclusion of a three-year study conducted under the auspices of the National Academy of Sciences and recently published in a volume entitled *Information Technology and the Service Society: A Twenty-First Century Lever*. As a member of the committee that produced this tome, I can attest to the fact that the measurement critique found many a sympathetic ear in our debates.

In its simplest form, the paradox went like this: America's vast service sector — industries such as banks, airlines, telecommunications and retail that collectively own about 85% of the nation's installed base of information technology — was stuck in a quagmire of disappointing productivity growth.

In the 1980s, this segment of the economy upped the ante on technology, spending an additional $860 billion on hardware alone. At the same time, however, service sector productivity failed to respond, continuing to increase at an anemic 0.7% average annual rate. The widely presumed benefits of the Information Age were starting to ring hollow.

From the beginning, I never felt this was a statistical fluke. Yes, the measurement pitfalls of gauging service sector output are legendary. But something more powerful was at work. Sheltered from competition by regulation and the lack of foreign players, service companies were becoming more complacent about matters of cost control and were loading up on both workers and machines.

The result was a bad case of bloated costs, highlighted by a rapidly growing infrastructure of unproductive information technology.

The moment of truth came with a sea change in the competitive environment. Triggered by deregulation and globalization, a massive wave of service sector restructuring began in the early 1990s, sparking unprecedented upheaval in America's technology user community. The harsh reality of service sector restructuring suggests there was something to the paradox all along.

But that was then. Courtesy of restructuring, America is beginning to move to the other side of its technology quandary. As service industries scramble to survive in today's competitive climate, they are finally using information technologies as strategic tools for competitive advantage.

Moreover, salespeople are being empowered with potent point-of-sale computing devices, enabling them to participate in higher-value activities such as inventory control and customer feedback. Additionally, a whole layer of midlevel, paper-shuffling managers is being replaced by the combination of global telecommunications networks and on-line transaction tracking systems.

And so the saga comes full circle. The paradox served the very useful purpose of signaling that something was amiss as America leapt headlong into the Information Age.

But now managers are left with the arduous task of resolving the paradox. That means adopting technology-based strategies aimed at flattening corporate bureaucracies, restoring flexibility to cost structures and providing the long-awaited boost to white-collar productivity. Let memories of the paradox endure, however, as a warning of how easy it is to stray from the path. ☐

Roach is co-director of global economics at Morgan Stanley & Co.

The [productivity] paradox served the very useful purpose of signaling that something was amiss as America leapt headlong into the Information Age.

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